

**PRELIMINARY ASSESSMENT / SITE INSPECTION
FOR
BOOKER LANDFILL SITE
1400 WEST TIDWELL ROAD
HOUSTON, HARRIS COUNTY, TEXAS**

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY

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1. INTRODUCTION

1.1 PURPOSE

Weston Solutions, Inc. (WESTON®) has prepared this Preliminary Assessment / Site Inspection (PA/SI) Report to provide the U.S. Environmental Protection Agency (EPA) Region 6 with the results of the site reconnaissance, background investigation, and sampling activities performed at the Booker Landfill site property in Houston, Harris County, Texas. A Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Information System (CERCLIS) identification number of TXN000605565 has been assigned to this site. WESTON was tasked under Superfund Technical Assessment and Response Team (START-2) contract number 68-W-01-005 to perform this PA/SI under Technical Direction Document (TDD) number 06-03-09-0004 (Reference 1, provided as Appendix E). The information presented in this report is based on a site reconnaissance conducted on 2 October 2003, and a review of file information obtained from EPA Region 6 and the City of Houston, including a previous report and data provided by a private contractor retained by concerned citizens. START-2 also reviewed aerial photographs, performed interviews of persons knowledgeable of the site, and performed sampling of source and potential target media on 27 and 28 October 2003.

1.2 OBJECTIVES OF THE INVESTIGATION

The PA/SI is a screening investigation in a series of site assessments that the EPA may complete at a known or potential hazardous waste site being investigated under CERCLA prior to its possible inclusion on the National Priorities List (NPL). The primary objectives of this PA/SI were the following:

- Identify potential Hazardous Waste Source Areas (HWSAs) at the site to document the presence of hazardous substances at the site and collect data that can be used to characterize those source wastes.
- Evaluate the potential threat exposure to or migration of hazardous substances from the site.
- Collect information that can be used to assess the site using the EPA Hazard Ranking System (HRS) to help determine whether further actions related to the site under CERCLA are warranted.

1.3 SCOPE OF WORK

The PA/SI is intended to be a screening investigation of the site. The Scope of Work (SOW) is centered on characterizing the site through the completion of limited site-related research, site reconnaissance, and focused sampling activities. START-2 completed the following tasks as part of this investigation:

- An on-site reconnaissance was performed to document current site conditions and to identify potential sources of hazardous substances at the site. As part of the reconnaissance, a survey of the site vicinity area was completed to identify potential receptors or targets of hazardous substance migration and exposure attributable to the site.
- A site-specific Quality Assurance Sampling Plan (QASP) and a Health and Safety Plan (HASP) were prepared to provide a plan of action for PA/SI sampling activities. (The QASP, referenced in Section 9 as Reference 3, is provided as Appendix A.)
- Available reports and historical data related to the site were reviewed.
- Information documenting the environmental setting of the site vicinity was obtained to characterize the groundwater, surface water, soil exposure, and air pathways.
- Interviews were conducted with persons knowledgeable of the site and of its surroundings.
- Available information from the on-site observations, historical aerial photographs, interviews, area environmental information, and area demographic characteristics were evaluated.
- A PA/SI sampling event was performed. Both source soil and environmental media (from ditch and residential soil) were sampled.
- Low concentration samples (source soil, ditch, and residential soil samples) collected during the PA/SI sampling event were submitted to laboratories via the Contract Laboratory Program (CLP) for chemical analyses. Aliquots of low concentration (environmental) samples were sent to Chemtech of Mountainside, New Jersey, for inorganics analyses. Aliquots of low concentration (environmental) samples were sent to A4 Scientific of The Woodlands, Texas, for organics analyses.
- This PA/SI report presenting the findings of the investigation was prepared.
- All available information was entered into HRS SUPERScreen software to determine if the site is likely to receive a score of 28.50 or above under the HRS, potentially making it a candidate for placement on the NPL (Appendix D).

1.4 REPORT FORMAT

The PA/SI report is presented in a format that is intended to facilitate evaluation of the site using the HRS. The report contains the following sections:

- Section 1 – Introduction
- Section 2 – Site Characteristics
- Section 3 – Source Soil Characteristics
- Section 4 – Groundwater Pathway
- Section 5 – Surface Water Pathway
- Section 6 – Soil Exposure Pathway
- Section 7 – Air Pathway
- Section 8 – Conclusions
- Section 9 – Reference List

The references listed in Section 9 are cited in the text of the report and are maintained on file by START-2. Several references are also included as appendices to this report; they include the following:

- Appendix A – Quality Assurance Sampling Plan for Booker Landfill Site
- Appendix B – Preliminary Assessment / Site Inspection Logbook
- Appendix C – Preliminary Assessment / Site Inspection Photo Log
- Appendix D – National Priorities List Characteristics Form and Hazard Ranking System SUPERScreen Documentation Record
- Appendix E – TDD 06-03-09-0004 and Amendments A and B

All tables are found at the end of the section in which they are referenced. All appendices and figures are provided as a separate portable document format (PDF) file.

2. SITE CHARACTERISTICS

START-2 collected and reviewed available information regarding the site location, site description, nearby land use, site operational history, and property ownership. This site background information is summarized in this section.

2.1 SITE LOCATION AND OWNERSHIP

The Booker Landfill site is a former municipal landfill located south of (b) (6), between (b) (6) and (b) (6), in Houston, Harris County, Texas. The site is located within the bounds of Houston Heights, Texas, U.S. Geological Survey (USGS) 7.5-minute quadrangle (Reference 4). The site location and site area were described in the QASP and are illustrated in Figure 2-1 and Figure 2-2, respectively. The former entry to the landfill is at the northeast corner of the site at approximately Latitude 29.84664° North and Longitude 95.73362° West. The geographic coordinates were collected using a Garmin™ handheld global positioning system (GPS) receiver; waypoint identifiers were recorded in the field logbook (Reference 5, provided as Appendix B).

The site is currently owned by Raymond Booker (telephone number: (b) (6); address: (b) (6), Houston, Texas 77560). When contacted by START-2 regarding access to the Booker Landfill site, Raymond Booker stated that he is the overseer of the property and that the current owner is his cousin, Arthur Booker. Raymond Booker signed a site access agreement for the PA/SI sampling event.

2.2 SITE DESCRIPTION

START-2 conducted a site reconnaissance visit on 2 October 2003. During the site reconnaissance, START-2 member Michelle Brown visited the site, visually examined the property, recorded observations in a logbook, and photographically documented the site conditions. Region 6 EPA representative Bill Rhotenberry, the Site Assessment Manager (SAM), was present at the time of the site visit (Reference 5). City of Houston representative Chuck Roosevelt and Texas Commission on Environmental Quality (TCEQ) representative Andy Vance were also present. Observations made during the site reconnaissance are summarized as follows:

- The Booker Landfill site is approximately 30 acres in size and is situated in a suburban area.

- The site consists of broad, flat areas of barren soil, caused by what appears to be the recent grading of fill soil, with patches of vegetation throughout. No buildings are on the property, and the site is unfenced.
- A ditch that contains heavy vegetation is located along the south end of the site and abuts adjacent residential property. This ditch is formed from a berm built up with the addition of soil forming a cap on the former landfill. At its highest, the berm is approximately 15 feet above the ditch.
- The only visible trash is located in the ditch on the south end of the site. At the ditch's lowest point, trash has been found approximately 1 foot below ground surface (bgs).
- The ditch conveys runoff from the berm on the south of the site toward (b) (6), and then runoff flows south down either (b) (6) or (b) (6) and into the city stormwater system off (b) (6). The flow eventually enters into Whiteoak Bayou. To the north of the berm, the flow is to the north, toward (b) (6), and into the city stormwater system.

Site features are shown in the Site Plan Map provided as Figure 2-3.

The area surrounding the site was examined during the site reconnaissance to identify nearby land use, potential alternative source sites, and potential receptors or targets of hazardous substance migration from the site. The land immediately adjacent to the site is described as follows:

- The site is bordered on the north by (b) (6).
- The site is bordered on the south by a ditch, heavy vegetation, residential properties, and (b) (6).
- The site is bordered on the east by heavy vegetation, residential property, and (b) (6).
- The site is bordered on the west by heavy vegetation and (b) (6).

Most of the residential development, is south of the site as shown in Figure 2-3. Scattered single residences were observed east of the site within 0.5 mile.

2.3 OPERATIONAL AND REGULATORY COMPLIANCE HISTORY

The Booker Landfill site (also known as the West Donovan Landfill) was an un-permitted municipal landfill operated by Raymond Booker from the late 1960s to the early 1970s. Operations at the landfill began in approximately 1969. No regulatory compliance records for

Booker Landfill were obtained by START-2. Nine other landfill sites have been identified through the TCEQ Solid Waste Management Facilities Directory within 0.5 mile of the site. These sites were in operation around the same time as Booker Landfill, all having since been closed.

Because of health concerns posed by local residents, Quantum Environmental Consultants, Inc. (Quantum) conducted a Limited Environmental Site Assessment (ESA) for the Ella Park Terrance Civic Club in April 2003 (Reference 6). As part of the investigation, Quantum provided preliminary data on potential contaminants that may have migrated from Booker Landfill site and impacted surface soils and standing surface water in the area of the (b) (6), located on (b) (6). Based on the limited scope of the April 2003 ESA, sufficient data were not available to determine whether the contamination at the subject property was due to off-site surface migration from the former landfill property or from other potential sources. Since the extent of contamination in the soil was not determined, further assessment was recommended.

Quantum collected samples from the site and surrounding properties in May 2003. Soil samples were collected from eight residential properties on the north and south side of (b) (6) and on the south side of the Booker Landfill site. Surface water samples were collected from standing water in two locations on or near the (b) (6) residential properties. All samples were analyzed for volatile organic compounds (VOCs), semivolatile compounds (SVOCs), total petroleum hydrocarbons (TPH), and Resource Conservation and Recovery Act (RCRA) metals. The surface water samples were also analyzed for polychlorinated biphenyls (PCBs). Analytical results of the soil samples collected indicated VOCs and SVOCs were below laboratory detection limits except for benzo (g,h,i) perylene reported at 0.361 mg/kg. TPH and metals (arsenic, barium, cadmium, chromium, and lead) were detected in soil. Barium (1326 mg/kg), cadmium (6.4 mg/kg) and lead (as high as 86.2 mg/kg) concentrations were above TCEQ Tier 1 Protective Concentration Levels (PCLs) for residential, 0.5-acre source areas. No reported concentrations exceeded the human dermal, ingestion, and inhalation pathway (^{Tot} SOIL comb.) PCLs. TPH levels were also shown to be elevated in some sampling locations at 1240 mg/kg and 854 mg/kg. PCBs, VOCs, SVOC, and TPH were reported to be below detection

limits in samples obtained from the standing water. Barium was detected in the surface water samples, but below TCEQ PCLs for residential, 0.5-acre source area, groundwater-protective soil concentrations.

The City of Houston collected one surface and one subsurface soil sample (1 to 12 inches bgs) from the ditch at the south end of the site, approximately 100 feet north of the end of (b) (6), on 20 May 2003, and one surface water sample from standing water at a unknown location on 25 June 2003. The samples were submitted to the City of Houston Health and Human Services Department Bureau of Laboratory Services and analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals, priority pollutants VOCs, polynuclear aromatic hydrocarbons (PAH), chlordanes, PCBs, and pesticides. TCLP data are used to assess if a waste is characteristically hazardous according to RCRA. No RCRA toxicity characteristic thresholds published in 40 Code of Federal Regulations (CFR) 261 were exceeded. The results are summarized in tables in Reference 8. No background samples were collected during this sampling event.

2.4 POTENTIAL SOURCES OF HAZARDOUS SUBSTANCES

The known and potential sources of hazardous substances identified at the site, based on available background information and observations made during the site reconnaissance, are described in this subsection. One potential source of hazardous substances was identified at the site.

2.4.1 Contaminated Soil

The disposal of un-permitted municipal waste, landfilled over several years on-site, may have caused soil contamination. This contaminated soil was the sole source identified as causing potential exposure to susceptible targets. The source area encompasses approximately 1,306,800 square feet and is unlined, has no maintained engineered cover, and no run-on or runoff management system. Photographs of the source area observed during the site reconnaissance and sampling event are provided in Appendix C (Reference 7).

2.5 RATIONALE FOR ADDITIONAL WORK

The presence of hazardous substances, their potential migration from the site, and their potential impact to humans and other environmental receptors were of general concern when this PA/SI was

tasked. Based on available background information and the October 2003 site reconnaissance observations, the primary concern for each migration pathway and the scope of work performed to address these issues during the PA/SI are summarized as follows:

- The presence of hazardous substances at the site was of general concern. Potential areas of observed contaminated soil were present and needed to be characterized. The characteristics and sources of hazardous substances potentially present at the site are described in Subsection 2.4. The sampling of source wastes and laboratory analytical results are discussed in Section 3.
- A significant release to groundwater was not suspected at the Booker Landfill site because usable groundwater in the region is pumped from depths of approximately 300 feet bgs. Shallow groundwater is known to be present at 13 to 15 feet bgs; however, no evidence has been identified that indicates this groundwater zone is being used by the local population. There are two industrial, one unused and one domestic well within 1 mile of the site.
- A significant release to the surface water pathway is not suspected at the Booker Landfill site because there are no surface water bodies within 1 mile of the site, and although there is no containment to contain surface water runoff from the site, no direct flow to a surface water body exists. Discharges from the sources at the site most likely would flow overland north toward (b) (6) and into the city stormwater system. At the south boundary of the property, drainage flows into the ditch just north of the residential properties off (b) (6) and flows along either (b) (6) or (b) (6) and into the city stormwater system off (b) (6) (see Figure 2-3). The flow eventually enters into Whiteoak Bayou at an unknown location. The site's southern ditch has flooded during storm events, and the stormwater has affected local residents, as further described in Section 5.
- Areas of affected soil are present on-site, as evidenced by trash visible at the ground surface in the southern ditch, by discoloration of concrete in the drainage area just south of the site, and by the historical use of the site as a landfill. The soil exposure pathway is considered a significant risk because of proximity to residences and general accessibility of the site. START-2 collected residential soil samples to evaluate whether substances attributable to the Booker Landfill site had migrated onto nearby residential properties where they could pose a soil exposure threat, as described in Section 6. The soil pathway was the main focus of the PA/SI sampling event. Soil pathway sampling and analytical results are discussed further in Section 6.
- A significant release to air is not suspected due to the nature of the wastes, a lack of significant odors observed during the site reconnaissance, and no significant observations of organic vapors using health and safety air monitoring equipment during the site reconnaissance and PA/SI sampling event. Since site observations and field screening did not indicate a potential for a significant release to air, no air sampling was performed, although the air pathway was characterized as described in Section 7.

3. SOURCE SOIL CHARACTERISTICS

Citizen complaints to the City of Houston and the EPA as well as observations made during the site reconnaissance have each confirmed the presence of trash exposed at the surface in the ditch south of the former landfill. Recent City of Houston investigations included soil and surface water sampling in the ditch at the south end of the landfill and in resident's back yards. During the sampling event, the city found debris between 2.5 and 4 feet bgs (Reference 8). START-2 performed source soil sampling activities at the Booker Landfill site on 27 and 28 October 2003, during the PA/SI sampling event. In general accordance with the objectives of the PA/SI, START-2 developed and implemented a sampling strategy primarily aimed at characterizing the soil contamination at the site, and to document the presence, if any, of hazardous substances. The sampling activities and analytical results relevant to the source characterization are summarized in this section of the report. START-2 completed these sampling activities in general accordance with the site-specific QASP approved by EPA prior to the work.

3.1 SOURCE SOIL SAMPLING AND ANALYSES

3.1.1 Source Soil Sampling Activities

PA/SI sampling activities for source soil characterization focused on the collection of samples from surface soil on the site. Sample locations were determined by direction of the EPA. START-2 collected four source characterization soil samples and one field duplicate soil sample as part of the PA/SI to evaluate the presence of hazardous substances in the ground surface soil on the site. The sample locations are shown on Figure 3-1, and Table 3-1 provides a summary of the source soil samples collected. The source characterization samples were collected as follows:

- One grab source characterization sample ((b) (6)) was collected from the southeast corner of the site just north of where stormwater runoff flows down (b) (6). This sample was collected from the 0- to 6-inches bgs depth interval.
- One grab source characterization sample and a field duplicate ((b) (6)) were collected in a low depression, vegetated area west of (b) (6). This sample was collected from the 0- to 6-inches bgs depth interval.
- One grab source characterization sample ((b) (6)) was collected west of samples

(b) (6) in an area that sloped downward north of the berm and southern ditch in a vegetated area. This sample was collected from the 0- to 6-inches bgs depth interval.

- One grab source characterization sample ((b) (6)) was collected from the southwest corner of the site just north of where stormwater runoff flows down (b) (6). This sample was collected from the 0- to 6-inches bgs depth interval.

3.1.2 Laboratory Analyses

Source characterization samples were analyzed by A4 Scientific for Target Compound List (TCL) VOCs, TCL SVOCs, TCL pesticides, and PCBs, and by Chemtech for Target Analyte List (TAL) metals and cyanide. The results of these analyses are provided in Reference 9. A summary of the constituents detected are presented in Table 3-2 through Table 3-5. The laboratory reports are maintained on file by START-2 and are not included with this document.

No significant data quality issues affecting the overall usability of the laboratory results were identified. Minor data quality issues are listed in the laboratory narrative, found in Reference 9, and qualifiers are explained in the result table keys.

3.2 SOURCE SOIL ANALYTICAL RESULTS

The laboratory analytical results for the samples collected during the PA/SI for source characterization purposes are summarized below.

3.2.1 PA/SI Source Soil Analytical Results

START-2 collected source soil samples at the Booker Landfill site to characterize and evaluate the presence of hazardous substances. Subsection 2.4 describes the potential sources of hazardous materials based on the 2 October 2003 site reconnaissance. A summary of the source soil samples collected, rationale for their collection, sample IDs, and other sample information is provided in Table 3-1. The results of laboratory analyses are described in this section.

3.2.1.1 Source Sampling Analytical Results – Surface Soil

Four samples ((b) (6)) were collected to characterize the soil visible at the ground surface on the Booker Landfill site. These samples

were collected from locations spanning the length of the former landfill to characterize the source materials at different locations. The results are summarized as follows:

(b) (6) (southeast corner of site, 0- to 6-inches bgs)

- Inorganics – Aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, sodium, vanadium, and zinc were reported above the laboratory instrument detection limits (IDLs). Refer to Table 3-2 for specific values.
 - None of these analytes listed above meet the HRS definition of observed contamination. All of the concentrations reported are less than three times the background levels, summarized in Table 6-9.
 - None of the reported inorganic concentrations exceed published EPA Region 6 Medium-specific Screen Levels (MSSLs) for Residential Soil Exposure.
- VOCs – No volatiles were reported.
- SVOCs – No semivolatiles were reported.
- Pesticides – No pesticides were reported.
- PCBs – No PCBs were reported.

(b) (6) (south end of site, east of center, 0- to 6-inches bgs and duplicate)

- Inorganics – Aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, sodium, vanadium, and zinc were reported above the laboratory IDLs. Refer to Table 3-2 for specific values.
 - None of these analytes listed above meet the HRS definition of observed contamination. All of the concentrations reported are less than three times the background levels, summarized in Table 6-9.
 - None of the reported inorganic concentrations exceed published EPA Region 6 MSSLs for Residential Soil Exposure.
- VOCs – Acetone, methyl acetate, and 2-butanone were reported above the laboratory IDLs. Refer to Table 3-3.
 - None of the reported VOC concentrations exceed published EPA Region 6 MSSLs for Residential Soil Exposure.
- SVOCs – No semivolatiles were reported.

- Pesticides – No pesticides were reported.
- PCBs – No PCBs were reported.

(b) (6) (south end of site, west of center, 0- to 6-inches bgs)

- Inorganics – Aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, sodium, vanadium, and zinc were reported above the laboratory IDLs. Refer to Table 3-2 for specific values.
 - None of these analytes listed above meet the HRS definition of observed contamination. All of the concentrations reported are less than three times the background levels, summarized in Table 6-9.
 - None of the reported inorganic concentrations exceed published EPA Region 6 MSSLs for Residential Soil Exposure.
- VOCs – Methylene chloride was reported above the laboratory IDL. Refer to Table 3-3.
 - Methylene chloride did not meet the HRS definition of observed contamination. The concentration reported is less than three times the background level, summarized in Table 6-10.
 - The methylene chloride concentration did not exceed the published EPA Region 6 MSSL for Residential Soil Exposure.
- SVOCs – Phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and benzo(g,h,i)perylene were reported above the laboratory IDLs. Refer to Table 3-4.
 - None of the compounds listed above meet the HRS definition of observed contamination. All of the concentrations reported are less than three times the background levels, summarized in Table 6-11.
 - None of the reported SVOC concentrations exceed published EPA Region 6 MSSLs for Residential Soil Exposure.
- Pesticides – No pesticides were reported.
- PCBs – No PCBs were reported.

(b) (6) (southwest corner of site, 0- to 6-inches bgs)

- Inorganics – Aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, sodium, vanadium, and zinc were reported above the laboratory IDLs. Refer to Table 3-2 for specific values.

- None of these analytes listed above meet the HRS definition of observed contamination. All of the concentrations reported except selenium are less than three times the background levels, summarized in Table 6-9. Selenium was not reported above the Contract Required Detection Limit (CRDL).
- None of the reported inorganic concentrations exceed published EPA Region 6 MSSLs for Residential Soil Exposure.
- VOCs – No volatiles were reported.
- SVOCs – Phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, bis(e-ethylhexyl)phthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(g,h,i)perylene, and benzo(g,h,i)perylene were reported above the laboratory IDLs. Refer to Table 3-4.
 - None of the compounds listed above meet the HRS definition of observed contamination. All of the concentrations reported are less than three times the background levels, summarized in Table 6-11.
 - None of the reported SVOC concentrations exceed published EPA Region 6 MSSLs for Residential Soil Exposure.
- Pesticides – Gamma-chlordane was reported above the laboratory IDL.
 - Gamma-chlordane did not meet the HRS definition of observed contamination. It was not reported above the CRDL.
 - The gamma-chlordane concentration did not exceed the published EPA Region 6 MSSL for Residential Soil Exposure.
- PCBs – No PCBs were reported.

TABLE 3-1
Source Sampling Summary
Booker Landfill Site
Harris County, Texas

Sample Number	Sample Location and Description	Analysis	Rationale for Sample Collection	Date Sample Collected
(b) (6)	Source Area – surface soil from site area, 0-6" bgs	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Waste/Source Characterization Surface Soil 0 to 6 inches bgs	10/28/2003
(b) (6)	Source Area – surface soil from site area, 0-6" bgs	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Waste/Source Characterization Surface Soil 0 to 6 inches bgs	10/28/2003
(b) (6)	Source Area – surface soil from site area, 0-6" bgs	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Duplicate Waste/Source Characterization Sample	10/28/2003
(b) (6)	Source Area – surface soil from site area, 0-6" bgs	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Waste/Source Characterization Surface Soil 0 to 6 inches bgs	10/28/2003
(b) (6)	Source Area – surface soil from site area, 0-6" bgs	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Waste/Source Characterization Surface Soil 0 to 6 inches bgs	10/28/2003

Table 3-2
Laboratory Analytical Summary – Inorganic
Source Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type		EPA Region 6 MSSL Residential Soil Value MG/KG	(b) (6)									
			10/28/2003 Source Soil Sample Primary Sample		10/28/2003 Source Soil Sample Primary Sample		10/28/2003 Source Soil Sample Duplicate Sample		10/28/2003 Source Soil Sample Primary Sample		10/28/2003 Source Soil Sample Primary Sample	
			MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
			Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
Inorganics												
ALUMINUM	7429905	7.62E+04	2060		3140		3270		2230		4370	
ARSENIC	7440382	2.16E+01	1.5	LJv	3.9	Jv	4.5	Jv	2.3	LJv	3.7	Jv
BARIUM	7440393	5.47E+03	59.5		123		80		57.9		136	
BERYLLIUM	7440417	1.54E+02	0.27	L	0.47	L	0.49	L	0.41	L	0.47	L
CALCIUM	7440702	---	4020		6500		15800		36200		40800	
CHROMIUM	7440473	2.11E+02	4.8	Jv	5.7	Jv	5.6	Jv	4.8	Jv	6.5	Jv
COBALT	7440484	9.03E+02	1.8	L	6	L	3.6	L	3.5	L	4.5	L
COPPER	7440508	2.91E+03	2.6	LJv	3.7	LJv	4.2	LJv	5.1	LJv	9	Jv
IRON	7439896	2.35E+04	3120		4700		5680		4910		6060	
LEAD	7439921	4.00E+02	6.3		12.5		11.8		14.2		27.6	
MAGNESIUM	7439954	---	501	L	768	L	857	L	834	L	2180	
MANGANESE	7439965	3.24E+03	45.3		412		222		88.8		255	
NICKEL	7440020	1.56E+03	2.7	LJv	4.1	LJv	4.5	LJv	3.6	LJv	6.8	LJv
POTASSIUM	7440097	---	100	L	183	L	215	L	334	L	423	L

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Table 3-2 (Continued)
Laboratory Analytical Summary – Inorganic
Source Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type		(b) (6)										
units		EPA Region 6 MSSL Residential Soil	10/28/2003 Source Soil Sample Primary Sample		10/28/2003 Source Soil Sample Primary Sample		10/28/2003 Source Soil Sample Duplicate Sample		10/28/2003 Source Soil Sample Primary Sample		10/28/2003 Source Soil Sample Primary Sample	
		Value MG/KG	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
SELENIUM	7782492	3.91E+02	0.91	U	1.0	U	1.1	U	0.92	U	1.2	L
SODIUM	7440235	---	126	L	152	L	152	L	336	L	205	L
VANADIUM	7440622	7.82E+01	9	L	14.4		14		12.8		16.1	
ZINC	7440666	2.35E+04	6.9		13.3		13.8		23.2		183	

U = Undetected at the laboratory reported detection limit (IDL).

J = Result is estimated.

L = Reported concentration is between the IDL and the Contract Required Detection Limit (CRDL).

v = Low bias.

Table 3-3
Laboratory Analytical Summary – VOCs
Source Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected		EPA Region 6 MSSL Residential Soil	(b) (6)					
			10/28/2003		10/28/2003		10/28/2003	
			Source Soil Sample		Source Soil Sample		Source Soil Sample	
			Primary Sample		Duplicate Sample		Primary Sample	
			UG/KG		UG/KG		UG/KG	
Sample Media								
Sample QA Type								
units								
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val	Result	Val
Volatile Organics								
ACETONE	67641	7.04E+04	1800	D	990	LJ	10	U
METHYL ACETATE	79209	2.21E+04	13	U	870	LJ	10	U
METHYLENE CHLORIDE	75092	8.90E+00	13	U	1500	U	3	LJ
2-BUTANONE	78933	1.42E+04	38		1500	U	10	U

U = Undetected at the laboratory reported detection limit (IDL).

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

D = Result from diluted analysis.

Table 3-4
Laboratory Analytical Summary – SVOCs
Source Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type units		EPA Region 6 MSSL Residential Soil MG/KG	(b) (6)			
			10/28/2003		10/28/2003	
			Source Soil Sample		Source Soil Sample	
			Primary Sample		Primary Sample	
			UG/KG		UG/KG	
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val
Semi-Volatile Organics						
PHENANTHRENE	85018	---	90	LJ	40	LJ
FLUORANTHENE	206440	2.29E+03	250	LJ	110	LJ
PYRENE	129000	2.31E+03	180	LJ	130	LJ
BENZO(A)ANTHRACENE	56553	6.22E-01	120	LJ	110	LJ
CHRYSENE	218019	6.22E+01	140	LJ	150	LJ
BIS(2-ETHYLHEXYL)PHTHALATE	117817	3.48E+01	340	U	53	LJ
BENZO(B)FLUORANTHENE	205992	6.22E-01	130	LJ	160	LJ
BENZO(K)FLUORANTHENE	207089	6.22E+00	110	LJ	67	LJ

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Table 3-4 (Continued)
Laboratory Analytical Summary – SVOCs
Source Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type units		EPA Region 6 MSSL Residential Soil	(b) (6)			
			10/28/2003		10/28/2003	
			Source Soil Sample		Source Soil Sample	
			Primary Sample		Primary Sample	
			UG/KG		UG/KG	
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val
BENZO(A)PYRENE	50328	6.22E-02	120	LJ	220	LJ
INDENO(1,2,3-CD)-PYRENE	193395	6.22E-01	340	U	170	LJ
DIBENZO(A,H)-ANTHRACENE	53703	6.22E-02	340	U	140	LJ
BENZO(G,H,I)PERYLENE	191242	—	85	LJ	910	

U = Undetected at the laboratory reported detection limit (IDL).

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

Table 3-5
Laboratory Analytical Summary – Pesticides and PCBs
Source Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type units		EPA Region 6 MSSL Residential Soil	(b) (6)		
			4111.002		
			10/28/2003		
			Source Soil Sample		
			Primary Sample		
			UG/KG		
			Result		
			Va		
ANALYTE		CAS Number	MG/KG	Result	Va
GAMMA-CHLORDANE		5103742	1.62E+00	2.2	LJ

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

4. GROUNDWATER PATHWAY

A discussion of the groundwater migration pathway is provided in this section. The discussion focuses on aquifer characteristics, the likelihood of a release to groundwater, and the potential targets of hazardous substance migration via the groundwater pathway.

4.1 HYDROGEOLOGIC SETTING

4.1.1 Geologic Framework

Harris County is situated on the West Gulf Coastal Plain geomorphic unit in which the surface and near-surface sediments dip gulfward at less than 2° and crop out on gulf-paralleling bands. The surface geologic units of the Booker Landfill site are upper Tertiary or Cenozoic to Holocene in age and include the Beaumont Formation. The Pleistocene-age Beaumont Formation underlies the Booker Landfill site area and is known to be approximately 100 feet thick in this area (Reference 10).

4.1.2 Groundwater Conditions

Regionally, 30 percent of potable groundwater in Harris County is pumped from the Chicot and Evangeline aquifers from 202 permitted wells at 99 separate groundwater plants. These are very deep wells and according to the City of Houston Water Quality Report are not vulnerable to any surface contamination (Reference 11). The Chicot and Evangeline aquifers are regionally important aquifers along the eastern Texas and western Louisiana Gulf coastlines. The Chicot aquifer overlies the Evangeline aquifer. The aquifers are reported to be interconnected in some areas; it is unknown whether these aquifers are in communication in the vicinity of the Booker Landfill site.

The Chicot aquifer is the shallower of the two units; the top of the Chicot aquifer is approximately 175 to 400 feet bgs in the site area (Reference 12). The Chicot aquifer extends to approximately 400 feet bgs. The Evangeline aquifer underlies the Chicot aquifer, and extends to approximately 1,000 to 5,900 feet bgs. The Chicot-Evangeline aquifer system is overlain by the Beaumont Formation. The Beaumont Formation is a Pleistocene-aged clayey soil formation known for its shrink-swell properties and is considered a confining layer. The Chicot-

Evangeline aquifer system is not known or anticipated to be in communication with shallow groundwater-bearing zones that overlie the Beaumont Formation (Reference 10).

There are 62 public water wells located within 4 miles of the Booker Landfill site (see Table 4-1). Whether these wells are currently in use is unknown. The surrounding residential areas are all reported to be served by the City of Houston municipal water system. Based on a review of information available from the Texas Water Development Board (TWDB) groundwater and water well database, four water wells have been identified within 1 mile of the Booker Landfill site. Two of these wells are industrial, one is unused, and one is a domestic drinking water well. No water wells are reported present on-site (Reference 12).

4.2 LIKELIHOOD OF RELEASE

Based on available information, releases to the shallow groundwater-bearing zone may have occurred on-site, because the areas containing the wastes at the landfill do not have engineered liners. However, no wells are present on-site, and groundwater sampling or other subsurface investigations were not performed as part of this assessment. The likelihood of a release to the deeper, usable groundwater does not appear to be high because of the presence of the confining Beaumont Formation between the surface and the usable water-bearing zone. However, it is possible that a release has occurred due to the uncontained nature of some wastes present on the property. The likelihood of a chemical to release to the groundwater pathway depends on factors such as the depth to groundwater, depth of contamination, net precipitation, thickness of impermeable layers, and hydraulic conductivity of the subsurface. These factors are described below.

4.2.1 Depth to Groundwater

No wells are known to be present on-site and no subsurface investigations have been performed by START-2. Therefore, the depth to groundwater at the site is not precisely known. Based on available geologic and water well information for the nearby area, the minimum depth to the groundwater-bearing zone used by private and public drinking water suppliers in the area is estimated to be approximately 300 feet bgs (Reference 12).

Based on START-2 experience, the depth to the shallowest groundwater-bearing zone in this area of the City of Houston is approximately 15 to 30 feet bgs. The shallow groundwater is perched in a shallow water-bearing zone of the Beaumont Formation and is not in communication with the deeper groundwater used by the local population.

4.2.2 Depth of Contamination

No subsurface investigations have been performed as part of this assessment.

4.2.3 Net Precipitation

The net precipitation for the area is approximately 5 to 15 inches per year based on the Net Precipitation Factor Values mapped on Figure 3-2 of the Federal Register as part of the Final Rule, HRS developed by EPA (see Reference 2).

4.2.4 Thickness of Impermeable Layers

The Beaumont Formation, considered a confining layer that overlies the deeper, usable groundwater-bearing strata in Harris County, is estimated to be approximately 100 feet thick (Reference 10). No subsurface investigations have been performed, and the precise thickness of the Beaumont Formation at the Booker Landfill site is not known.

4.2.5 Hydraulic Conductivity of Impermeable Layers

No subsurface investigations have been performed and the hydraulic conductivity of the Beaumont Formation, an impermeable layer of clayey soil that would tend to limit contaminants from migrating to the shallow groundwater-bearing zone, is assigned a value 1×10^{-8} centimeters per second according to Table 3-6 of the Federal Register as part of the Final Rule, HRS developed by EPA (see Reference 2).

4.2.6 PA/SI Groundwater Sampling and Analytical Results

START-2 did not collect any groundwater samples as part of the PA/SI investigation. No on-site wells were identified at the Booker Landfill site.

4.3 GROUNDWATER PATHWAY RECEPTORS

One domestic drinking water well was identified within 4 miles of the Booker Landfill site based on a review of information available from the TWDB groundwater and water well database (Reference 12). No water wells are known to exist on-site.

The potential receptors of the groundwater pathway include the local population that partially relies on local aquifers as a source of water supply. The potential groundwater pathway receptors for the site are discussed below.

4.3.1 Nearest Well

START-2 did not observe drinking water wells at the site during the site reconnaissance or during the PA/SI site visit (Reference 5). Based on a search of the TWDB groundwater well data website page, the nearest well is located approximately 0.30 mile south of the Booker Landfill site (Reference 12). The well is listed by the TWDB as an industrial well.

4.3.2 Other Nearby Wells

START-2 retrieved information from the TWDB website to complete the water well survey. TWDB identified more than 100 wells, which included unused and industrial wells, within a 4-mile radius of the site (Reference 12). Several public supply water wells were identified within 4 miles of the site and are listed in Table 4-1.

4.4 GROUNDWATER PATHWAY CONCLUSIONS

Based on available information, releases to the shallow groundwater-bearing zone may have occurred on-site. The likelihood of a release to the deeper, usable groundwater does not appear to be high because of the presence of the confining Beaumont Formation between the surface and the usable water-bearing zone. The areas containing the wastes at the landfill do not have engineered liners; however, as no wells are present on or in the immediate vicinity of the site, groundwater sampling or other subsurface investigations of the shallow water-bearing zone were not performed as part of this assessment.

Table 4-1
Water Well Locations
Booker Landfill Site
Houston, Harris County, Texas

Distance Interval	Number of Domestic Water Wells	Number of Public Supply Water Wells
On-site	0	0
0-1 mile	1	0
1-2 miles	0	8
2-4 miles	0	54

Source: Report values are estimated based on the Texas Water Development Board Groundwater Well Database (Reference 12).

5. SURFACE WATER PATHWAY

The surface water pathway is not believed to be a significant pathway for the migration of hazardous substances from the Booker Landfill site. A discussion of the surface water drainage pathway, the likelihood of a release, and the potential targets of the hazardous substance migration are discussed in this section.

5.1 HYDROLOGIC SETTING

The surface water pathway includes the overland flow path, the probable point of entry (PPE), and surface water flow path. These pathway segments are described below.

5.1.1 Overland Flow Segment

The topography of the Booker Landfill and the surrounding areas is generally flat except for the berm that has been built-up on the south end of the site. The overland flow is towards the north and Tidwell Road and into the city stormwater system. At the south boundary of the property drainage occurs into the ditch just north of the residential properties off (b) (6) and flows south along either (b) (6) or (b) (6) and into the city stormwater system on (b) (6) (see Figure 2-3). The flow eventually enters Whiteoak Bayou at an unknown location.

According to local residents, the City of Houston, and the Quantum Limited Environmental Site Assessment, during flood events, stormwater runoff backs up south of the Booker Landfill site into the residents' backyards (Reference 6). Additionally, stormwater in the ditch south of the site flows along (b) (6) and (b) (6) and into (b) (6) (see Figure 2-3). Floodwaters back up on (b) (6) before entering the city stormwater system.

5.1.2 Probable Point of Entry

The Probable Point of Entry (PPE) is the estimated point at which the overland flow segment leading from the source areas reaches a surface water body. The PPE for the Booker Landfill site is unknown since the exact point where the city stormwater system enters Whiteoak Bayou could not

be determined. Assuming a direct flow into Whiteoak Bayou, the shortest distance to the PPE would be 1.2 miles (Reference 4).

5.1.3 Surface Water Segments

Any hazardous constituents released to the surface water pathway at the site would likely flow through the city stormwater system, until reaching the PPE at Whiteoak Bayou at an undetermined location. Whiteoak Bayou continues for approximately 12 miles before converging with Buffalo Bayou to complete the 15 mile target distance limit (TDL).

5.2 LIKELIHOOD OF RELEASE

Based on available information, releases to surface water pathway may have occurred on-site, because the areas containing the wastes at the landfill do not have an engineered cover and debris is evident in the southern ditch of the site. Factors affecting the likelihood of release are described below.

5.2.1 Distance to Surface Water

The shortest distance from the source area to a perennial surface water body (Whiteoak Bayou) for the purpose of HRS scoring is assumed to be approximately 1.2 miles southwest through the city stormwater system (Reference 4).

5.2.2 Flood Frequency

Based on a review, local resident complaints and interviews with City of Houston personnel, the area surrounding the Booker Landfill site is prone to flooding resulting from drainage problems. The area surrounding the Booker Landfill site is outside the 500-year floodplain (Reference 13).

5.2.3 2-Year, 24-Hour Rainfall

The 2-year, 24-hour rainfall for Houston, Texas, is 5.3 inches (Reference 14).

5.2.4 Flood Containment

Based on observations during the site reconnaissance and the sampling event, the potential hazardous substance source areas at the site have no containment features that would prevent or

contain a release to the surface water pathway in the event that the source areas became flooded. The potential source area was not contained or diked to prevent surface water flow into these areas should flooding occur (Reference 5).

5.2.5 Surface Water Analytical Results from Previous Investigations

Quantum performed surface water sampling on 25 February 2003. Water samples were collected from standing water in two locations on or near residential properties located on (b) (6). The samples were submitted to Xenco Laboratories of Houston, Texas, and analyzed for total metals, VOCs, SVOCs, PCBs, and TPH. The results are summarized in the 8 April 2003 Limited Environmental Site Assessment report (Reference 6). Barium was the only constituent reported above laboratory reporting limits in the water samples collected. Barium concentrations (0.098 milligrams per liter [mg/L] in W-1434 and 0.472 mg/L in W-1547-ROAD) did not exceed applicable EPA Region 6 Maximum Contaminant Levels (MCLs). No background samples were collected during this sampling event.

The City of Houston collected one surface water sample from standing water and one sludge sample at a (b) (6) residence on 25 June 2003. The samples were submitted to the City of Houston Health and Human Services Department Bureau of Laboratory Services and analyzed for TCLP metals, priority pollutants SVOCs, priority pollutants VOCs, and TPH. The results are summarized in tables in Reference 8. No RCRA toxicity characteristic thresholds published in 40 Code of Federal Regulations (CFR) 260 or 261 were exceeded. No background samples were collected during this sampling event.

5.2.6 PA/SI Surface Pathway Sampling and Analytical Results

START-2 did not collect any surface water samples as part of the PA/SI investigation.

5.3 SURFACE WATER PATHWAY TARGETS

5.3.1 Drinking Water Intakes

No surface water intakes for drinking water supplies are known to be present within the 15 mile TDL of the Booker Landfill site. According to the City of Houston Water Quality Report, all

surface water intakes come from the San Jacinto River, through Lakes Conroe and Houston, and from the Trinity River through Lake Livingston (Reference 11).

5.3.2 Wetlands and Other Sensitive Environments

There is approximately 0.5 mile of wetland frontage in the vicinity or downstream of the Booker Landfill site (Reference 15). Although areas of standing water were present on-site, no hydrophytes were observed by START-2. START-2 did not observe any endangered species or critical habitats during the site visits. None of the habitats listed in The Texas Parks and Wildlife Annotated County Lists of Rare Species occur on or in the vicinity of the site (Reference 16).

5.3.3 Fisheries

No fisheries are known to be present between the Booker Landfill and Whiteoak Bayou. The drainage pathway between the site and Whiteoak Bayou is composed of a stormwater system that does not support fisheries. Whiteoak Bayou does not appear to be used for recreational fishing in the vicinity of the Booker Landfill site, and based on observations made during the site visits, the areas of the bayou just south of the site are concrete lined. Whiteoak Bayou enters Buffalo Bayou just north of a highly industrialized area where fishing is not suspected.

5.3.4 Surface Water Resources

No resource use or surface water intakes are known to be present within the 15 mile TDL of the Booker Landfill site.

5.4 SURFACE WATER PATHWAY CONCLUSIONS

Based on available information, releases to the surface water pathway may have occurred on-site. The areas containing the wastes at the landfill do not have engineered liners, however, runoff enters the municipal stormwater system soon after leaving the site and the flow distance to a perennial stream is estimated to be a minimum of 1.2 miles southwest of the site. The surface water pathway was not the focus of this investigation; START-2 did not perform surface water sampling.

6. SOIL EXPOSURE PATHWAY

Direct contact with contaminated soil is a potential route of exposure to potential hazardous substances that may be present at the Booker Landfill site. Both on-site surface soil (source samples) and surface soil samples from the southern drainage ditch, as well as residential surface soil in the vicinity of the Booker Landfill site have been sampled and evaluated. The discussion in this section focuses on soil exposure pathway factors including soil type, area of contamination, accessibility and the likelihood of exposure, and potential targets.

6.1 SURFICIAL CONDITIONS

The Booker Landfill site is located in an area of Harris County that is characterized by Gessner-Urban land complex soils. According the Soil Survey of Harris County, Texas, Gessner-Urban land soils are generally consist of built-up areas and areas where the population is increasing. Gessner soils are friable, slightly acid, dark grayish brown loam. Urban land consists of soils that have been altered or disturbed (Reference 17). Classifying these soils is not practical.

Visual evidence of contaminated soil was not observed during the PA/SI site reconnaissance and sampling visit, but exposed trash could be observed in the site's southern ditch (References 5 and 7). Photographs of areas of exposed trash are provided in Appendix C, which contains photographs taken during the site reconnaissance and sampling event (Reference 7).

6.2 LIKELIHOOD OF EXPOSURE

The surface soil pathway is the most likely target for potential releases from the Booker Landfill site. START-2 sampled on-site soil as described in Section 3. Factors related to the likelihood of exposure to areas of contaminated soil are presented in the following subsections. Soil analytical data from the PA/SI and previous investigations also are summarized.

6.2.1 Site Attractiveness and Accessibility

The site's attractiveness for public use is believed to be high because the site is off a major roadway, in a suburban location with no fencing. During the site reconnaissance and PA/SI sampling event,

there was evidence of soil being placed on top of the landfill. Stakes and tape measured areas of the site were also observed.

6.2.2 Soil Analytical Results from Previous Investigations

Quantum collected eight grab surface soil samples from the residential properties on the north and south side of (b) (6) on 25 February 2003. The samples were submitted to Xenco Laboratories of Houston, Texas, and analyzed for total metals, VOCs, SVOCs, PCBs and TPH. The results are summarized in the 8 April 2003 Limited Environmental Site Assessment report (Reference 6). Analytical results of the soil samples collected indicated VOCs and SVOCs were below laboratory detection limits except for benzo(g,h,i)perylene (0.361 [milligrams per kilogram] mg/kg in HB-1534). TPH and metals (arsenic, barium, cadmium, chromium, and lead) were detected in soil. Barium (1140 mg/kg in HB-1326, 220 mg/kg in HB1434), cadmium (6.4 mg/kg in HB-1402) and lead (as high as 86.2 mg/kg in HB-1534) concentrations were above TCEQ Tier 1 PCLs for residential, 0.5-acre source area, groundwater-protective soil concentrations. No background samples were collected during this sampling event.

6.2.3 PA/SI Soil Sampling Analytical Results

On-site surface soil was sampled by START-2 as described in Section 3. START-2 collected five surface soil samples from the ditch and seven surface soil samples from residential properties in the vicinity of the Booker Landfill site during the October 2003 PA/SI sampling event. Samples were collected from the ditch and nearby residential properties to further evaluate the potential migration of hazardous substances from the Booker Landfill site, and to further evaluate the potential for the local population to be exposed to substances attributable to the site via the soil exposure pathway. Background samples were also collected from nearby locations to evaluate an observed release and whether multiple sources or contaminant contributors exist. A summary of the ditch and residential soil sample identification, location and rationale is provided in Table 6-1. Residential and ditch soil sample locations are shown on Figure 6-1. Background sample locations are shown in Figure 6-2. Soil sampling, background and rinsate laboratory analytical results are provided in Tables 6-2 through 6-11, and are summarized as follows:

- Aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, sodium, vanadium, and zinc

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were reported above the laboratory IDLs as shown in Tables 6-2 and 6-6. None of these analytes meet the HRS definition of observed release. All of the concentrations reported except for mercury and selenium are less than three times the background levels. Mercury and selenium were not reported above the CRDL. Without background subtraction, iron in one residential sample exceeds EPA Region 6 MSSSLs for residential soil exposure. Taking into account background levels, none of the reported concentrations, including mercury and selenium, exceed EPA Region 6 MSSSLs for residential soil exposure.

- No VOCs were reported above laboratory IDLs, except for low concentrations of common laboratory contaminants (e.g., acetone and 2-butanone), as shown in Tables 6-3 and 6-7.
- Benzaldehyde, acetophenone, di-n-butylphthalate, bis(2-ethylhexyl)phthalate, 1,1'-biphenyl, n-nitroso diphenylamine, fluoranthene, pyrene, butylbenzylphthalate, and chrysene were reported above laboratory IDLs, as shown in Tables 6-4 and 6-8. None of these compounds meet the HRS definition of observed release. Fluoranthene, pyrene, butylbenzylphthalate, chrysene, and bis(2-ethylhexyl)phthalate are all at concentrations less than three times the background levels. Acetophenone, n-nitroso diphenylamine, benzaldehyde, and di-n-butylphthalate were not reported above the CRDL. 1,1'-Biphenyl is not attributable to the source. None of the compounds detected exceed EPA Region 6 MSSSLs for residential soil exposure.
- Gamma-chlordane was detected above the laboratory IDL in one residential sample, as shown in Table 6-5. This compound did not meet the HRS definition of observed contamination and was not reported above the CRDL. Gamma-chlordane did not exceed EPA Region 6 MSSSL for residential soil exposure.

6.3 SOIL EXPOSURE TARGETS

6.3.1 Resident Population

There is no resident population (persons living or working on areas of affected soil); there are no residents, and no full- or part-time employees at the Booker Landfill site.

6.3.2 Nearby Population

The nearby population includes those persons who live within 1 mile of areas of potential soil contamination attributable to the site. Those persons in houses, schools, or daycare facilities within 1 mile of the site may be considered part of the nearby population. Based on 2000 Census data and the MABLE/Geocorr Geographic Correspondence Engine, the nearby population is estimated to be 323 persons within a 0.25-mile radius, 1,513 within a 0.5-mile radius, 5,223 within a 1-mile radius, 34,341 within a 2-mile radius, 85,232 within a 3-mile radius, and 85,088 within a 4 mile radius (Reference 18).

6.3.3 Sensitive Environments

No sensitive environments have been identified or are known to exist in the immediate vicinity of the Booker Landfill site.

6.3.4 Resources

START-2, during the site reconnaissance or sampling events, did not observe any land resource use such as commercial agricultural, silviculture or livestock production or grazing on any part of the site or nearby land.

6.4 SOIL EXPOSURE CONCLUSIONS

Although there is evidence of exposed trash within the ditch south of the site and within a few feet of the surface soil in residents' yards, no evidence of soil contamination could be determined. Sampling of source wastes has confirmed the presence of low level inorganic and organic constituents in the source soil, but none of these concentrations meet the HRS definition of observed contamination.

The site is situated in an accessible area, next to a high traffic road and adjacent to residential properties. The population within a 1-mile radius of the site is estimated at approximately 5,223.

Analytical data derived from residential surface soil sampling indicates that hazardous substances attributable to the site are not present in the soils at the residential properties sampled. The PA/SI data do not indicate the presence of inorganics, VOCs, SVOCs, or pesticides in residential soils above the background levels, the laboratory CRDLs or the EPA Region 6 MSSSLs for residential soil exposure. Based on currently available data and information, soil exposure in the vicinity of the Booker Landfill site is not believed to be a significant concern.

TABLE 6-1
Residential / Ditch Soil Sampling Summary
Booker Landfill Site
Harris County, Texas

Sample Number	Sample Location and Description	Analysis	Rationale for Sample Collection	Date Sample Collected
(b) (6)	Residential Soil Sample, (b) (6) backyard	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/27/03
	Residential Soil Sample, (b) (6) backyard	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/27/03
	Residential Soil Sample, (b) (6) backyard	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/27/03
	Residential Soil Sample, (b) (6) backyard	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/27/03
	Residential Soil Sample, (b) (6) backyard	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/27/03
	Residential Soil Sample, (b) (6) backyard	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/28/03
	Residential Soil Sample, (b) (6) backyard	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/28/03
	Ditch Soil Sample, Northwest of Phillips Road	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/28/03
	Ditch Soil Sample, Northwest of (b) (6) backyard	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/28/03
	Ditch Soil Sample, North of (b) (6) backyard	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/28/03
	Ditch Soil Sample, North of and between (b) (6) backyards	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/28/03
	Ditch Soil Sample, North of Bersey Lane	VOCs, SVOCs, PCBs, Pesticides, Metals, Cyanide	Characterize Soil Exposure Pathway	10/28/03

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Table 6-2
Laboratory Analytical Summary - Inorganic
Residential Soil Samples

Sample ID	EPA Region 6 MSSL Residential Soil units Value CAS Number	(b) (6)															
Case Number																	
Sample Data Group																	
EPA CLP ID																	
Laboratory ID																	
Date Collected																	
Sample Media																	
Sample QA Type																	
		10/27/2003 Residential Soil Sample (b) (6) Primary Sample	10/27/2003 Residential Soil Sample (b) (6) Primary Sample	10/27/2003 Residential Soil Sample (b) (6) Primary Sample	10/27/2003 Residential Soil Sample (b) (6) Primary Sample	10/27/2003 Residential Soil Sample (b) (6) Primary Sample	10/28/2003 Residential Soil Sample (b) (6) Primary Sample	10/28/2003 Residential Soil Sample (b) (6) Primary Sample									
		MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG									
		Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val				
ANALYTE		MG/KG	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val			
Inorganics																	
ALUMINUM	7429905	7.62E+04	2040		3210		2020		1390		1470		1860		3020		
ARSENIC	7440382	2.16E+01	6.8	Jv	4.3	Jv	2.9	Jv	1.4	LJv	1.8	LJv	1.4	U	2.9	Jv	
BARIUM	7440393	5.47E+03	92.9		292		165		48.2		63.9		83.1		127		
BERYLLIUM	7440417	1.54E+02	0.33	L	0.54	L	0.24	L	0.18	L	0.23	L	0.3	L	0.55	L	
CADMIUM	7440439	3.90E+01	0.17	U	0.91	L	0.17	U	0.17	L	0.17	U	0.17	U	0.18	U	
CALCIUM	7440702	---	3930		16800		20400		2550		3220		7620		7570		
CHROMIUM	7440473	2.11E+02	24.5	Jv	6.4	Jv	12.6	Jv	3.9	Jv	3.2	Jv	3.5	Jv	4.3	Jv	
COBALT	7440484	9.03E+02	6.3	L	10.4	L	3.9	L	1.3	L	1.6	L	2	L	4.9	L	
COPPER	7440508	2.91E+03	185	Jv	16.5	Jv	19.8	Jv	23.5	Jv	6.8	Jv	13.3	Jv	5.1	LJv	
IRON	7439896	2.35E+04	32100		8140		7280		2110		2460		2970		8190		
LEAD	7439921	4.00E+02	44		57.7		28		22.3		28.4		30.6		17		
MAGNESIUM	7439954	---	674	L	1740		1330		371	L	512	L	714	L	1310		
MANGANESE	7439965	3.24E+03	224		647		183		71.6		85.7		93.3		161		

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Table 6-2 (Continued)
Laboratory Analytical Summary - Inorganic
Residential Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type		(b) (6)														
		EPA Region 6 MSSL Residential Soil	10/27/2003 Residential Soil Sample (b) (6) Primary Sample		10/27/2003 Residential Soil Sample (b) (6) Primary Sample		10/27/2003 Residential Soil Sample (b) (6) Primary Sample		10/27/2003 Residential Soil Sample (b) (6) Primary Sample		10/27/2003 Residential Soil Sample (b) (6) Primary Sample		10/28/2003 Residential Soil Sample (b) (6) Primary Sample		10/28/2003 Residential Soil Sample (b) (6) Primary Sample	
units			MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
Value																
CAS Number		MG/KG	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
ANALYTE																
NICKEL	7440020	1.56E+03	62.7	Jv	8.5	LJv	12.7	Jv	3	LJv	6.3	LJv	3.8	LJv	7.5	LJv
POTASSIUM	7440097	---	199	L	404	L	405	L	176	L	248	L	289	L	414	L
SELENIUM	7782492	3.91E+02	1.1	LJ	1.2	U	0.93	U	0.90	U	0.90	U	0.95	U	0.95	U
SODIUM	7440235	---	117	U	372	L	214	L	112	L	111	U	147	L	130	L
VANADIUM	7440622	7.82E+01	9	L	11.9	L	8.8	L	6.9	L	14.9		9.1	L	12.8	
ZINC	7440666	2.35E+04	9	L	538		114		55.8		99.3		78.8		88.1	

U = Undetected at the laboratory reported detection limit (IDL).

J = Result is estimated.

v = Low bias.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

Table 6-3
Laboratory Analytical Summary – VOCs
Residential Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type Units		EPA Region 6 MSSL Residential Soil MG/KG	(b) (6)			
			10/27/2003		10/28/2003	
			Residential Soil Sample (b) (6)		Residential Soil Sample (b) (6)	
			Primary Sample		Primary Sample	
			UG/KG		UG/KG	
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val
Volatile Organics						
ACETONE	67641	7.04E+04	170	J	25	U
2-BUTANONE	78933	1.42E+04	18	J	5	LJ

U = Undetected at the laboratory reported detection limit (IDL).

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

Table 6-4
Laboratory Analytical Summary – SVOCs
Residential Soil Samples

Sample ID		(b) (6)												
Case Number														
Sample Data Group														
EPA CLP ID														
Laboratory ID														
Date Collected		10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/28/2003	10/28/2003							
Sample Media		Residential Soil Sample	Residential Soil Sample	Residential Soil Sample	Residential Soil Sample	Residential Soil Sample	Residential Soil Sample							
		(b) (6)	(b) (6)	(b) (6)	(b) (6)	(b) (6)	(b) (6)							
Sample QA Type		Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample							
	EPA Region 6 MSSL Residential Soil													
units CAS Number	MG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
ANALYTE		Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Val
Semi-Volatile Organics														
BENZALDEHYDE	100527	6.11E+03	53	LJ	350	U	340	U			350	U	360	U
ACETOPHENONE	98862	1.74E+03	68	LJ	62	LJ	340	U			350	U	360	U
DI-N-BUTYLPHthalate	84742	6.11E+03	900	U	61	LJ	340	U			350	U	360	U
BIS(2-ETHYLHEXYL)PHthalate	117817	3.48E+01	1100		420		440		100	LJ	520		72	LJ
1,1'-BIPHENYL	92524	3.02E+03	3400		350	U	340	U			350	U	360	U

U = Undetected at the laboratory reported detection limit (IDL).

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

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Table 6-5
Laboratory Analytical Summary – Pesticides and PCBs
Residential Soil Sample

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type 	
---	--

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

Table 6-6
Laboratory Analytical Summary – Inorganic
Ditch Soil samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type		(b) (6)												
			10/28/2003 Ditch Soil Sample Primary Sample		10/28/2003 Ditch Soil Sample Primary Sample		10/28/2003 Ditch Soil Sample Primary Sample		10/28/2003 Ditch Soil Sample Primary Sample		10/28/2003 Ditch Soil Sample Primary Sample			
			EPA Region 6 MSSL Residential Soil											
			units		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
ANALYTE	CAS Number	Value MG/KG	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val		
Inorganics														
ALUMINUM	7429905	7.62E+04	3030		3600		4020		2220		2730			
ARSENIC	7440382	2.16E+01	4.8	Jv	3.1	Jv	2.8	LJv	2.2	LJv	2	LJv		
BARIUM	7440393	5.47E+03	154		158		105		117		172			
BERYLLIUM	7440417	1.54E+02	0.61	L	0.66	L	0.67	L	0.45	L	0.38	L		
CADMIUM	7440439	3.90E+01	0.19	U	0.63	L	0.27	U	0.17	U	0.62	L		
CALCIUM	7440702	—	8390		11900		8040		7210		15800			
CHROMIUM	7440473	2.11E+02	12.4	Jv	5.6	Jv	5.2	Jv	2.8	Jv	4.5	Jv		
COBALT	7440484	9.03E+02	6.6	L	5.9	L	5.5	L	4.6	L	4.3	L		
COPPER	7440508	2.91E+03	29.4	Jv	10.3	Jv	7.2	LJv	7.8	Jv	12.7	Jv		
IRON	7439896	2.35E+04	13000		7390		5840		4560		4050			
LEAD	7439921	4.00E+02	20.4		21		10.6		8.4		25.7			
MAGNESIUM	7439954	—	1460		1700		1550	L	916	L	1260	L		
MANGANESE	7439965	3.24E+03	167		176		98.8		92.3		264			
MERCURY	7439976	2.35E+01	0.1	LJv	0.06	U	0.09	U	0.06	U	0.07	U		

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Table 6-6 (Continued)
Laboratory Analytical Summary – Inorganic
Ditch Soil samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type		(b) (6)												
			10/28/2003 Ditch Soil Sample Primary Sample		10/28/2003 Ditch Soil Sample Primary Sample		10/28/2003 Ditch Soil Sample Primary Sample		10/28/2003 Ditch Soil Sample Primary Sample		10/28/2003 Ditch Soil Sample Primary Sample			
			MG/KG		MG/KG		MG/KG		MG/KG		MG/KG			
			Value MG/KG		Result		Val		Result		Val		Result	
ANALYTE	CAS Number	EPA Region 6 MSSL Residential Soil units Value MG/KG	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
NICKEL	7440020	1.56E+03	14.8	Jv	19.4	Jv	4.6	LJv	4.1	LJv	5.2	LJv		
POTASSIUM	7440097	---	587	L	631	L	318	L	184	L	467	L		
SODIUM	7440235	---	127	U	126	L	636	L	186	L	147	L		
VANADIUM	7440622	7.82E+01	16		15		18.7	L	9.3	L	10.8	L		
ZINC	7440666	2.35E+04	146		75.4		24.9		44.7		141			

U = Undetected at the laboratory reported detection limit (IDL).

J = Result is estimated.

v = Low bias.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

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Table 6-7
Laboratory Analytical Summary – VOCs
Ditch Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Exposure Pathway Sample Media Sample QA Type units		EPA Region 6 MSSL Residential Soil MG/KG	(b) (6)					
			10/28/2003		10/28/2003		10/28/2003	
			Ditch Soil Sample		Ditch Soil Sample		Ditch Soil Sample	
			Primary Sample		Primary Sample		Primary Sample	
			UG/KG		UG/KG		UG/KG	
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val	Result	Val
Volatile Organics								
ACETONE	67641	7.04E+04	42	B	51	U	90	
2-BUTANONE	78933	1.42E+04	6	LJ	11	LJ	6	LJ

U = Undetected at the laboratory reported detection limit (IDL).

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

B = This result may be biased high because of laboratory/field contamination.

Table 6-8
Laboratory Analytical Summary – SVOCs
Ditch Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Exposure Pathway Sample Media Sample QA Type		EPA Region 6 MSSL Residential Soil	(b) (6)					
			10/28/2003		10/28/2003		10/28/2003	
			Ditch Soil Sample		Ditch Soil Sample		Ditch Soil Sample	
			Primary Sample		Primary Sample		Primary Sample	
units			UG/KG		UG/KG		UG/KG	
CAS Number		MG/KG	Result	Val	Result	Val	Result	Val
Semi-Volatile Organics								
ACETOPHENONE	98862	1.74E+03	49	LJ	370	U	400	U
N-NITROSO DIPHENYLAMINE	86306	9.93E+01	46	LJ	370	U	400	U
FLUORANTHENE	206440	2.29E+03	76	LJ	370	U	47	LJ
PYRENE	129000	2.31E+03	54	LJ	370	U	41	LJ
BUTYLBENZYLPHTHALATE	85687	2.40E+02	64	LJ	69	LJ	58	LJ
CHRYSENE	218019	6.22E+01	52	LJ	370	U	400	U
BIS(2-ETHYLHEXYL)PHTHALATE	117817	3.48E+01	220	LJ	140	LJ	320	LJ

U = Undetected at the laboratory reported detection limit (IDL).

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

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Table 6-9
Laboratory Analytical Summary – Inorganic
Background and Rinsate Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type		EPA Region 6 MSSL Residential Soil Value MG/KG	(b) (6)							
			10/28/2003 Background Soil Sample Primary Sample		10/28/2003 Background Soil Sample Primary Sample		10/28/2003 Background Soil Sample Primary Sample		10/28/2003 Rinsate Sample Primary Sample	
			MG/KG		MG/KG		MG/KG		UG/L	
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val	Result	Val	Result	Val
Inorganics										
ALUMINUM	7429905	7.62E+04	4170		1380		1090		27.7	U
ANTIMONY	7440360	3.13E+01	2.2	U	2.2	U	2.9	L	9.2	U
ARSENIC	7440382	2.16E+01	4.7	Jv	3.9	Jv	43	Jv	5.8	U
BARIUM	7440393	5.47E+03	107		38.6	L	64.9		1.2	U
BERYLLIUM	7440417	1.54E+02	0.49	L	0.16	L	0.2	L	0.10	U
CALCIUM	7440702	---	30400		16100		28800		107	U
CHROMIUM	7440473	2.11E+02	5.7	Jv	57	Jv	122	Jv	1.0	U
COBALT	7440484	9.03E+02	4.5	L	2.1	L	4.1	L	1.3	U
COPPER	7440508	2.91E+03	12.1	Jv	12.6	Jv	82.5	Jv	3	L
IRON	7439896	2.35E+04	5980		2450		23900		27.9	U
LEAD	7439921	4.00E+02	26.1		69		58.5		2.6	L
MAGNESIUM	7439954	---	1940		456	L	543	L	39.5	U
MANGANESE	7439965	3.24E+03	291		64.9		122		0.65	U
NICKEL	7440020	1.56E+03	7.8	LJv	22.4	Jv	87.5	Jv	2.3	U

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Table 6-9 (Continued)
Laboratory Analytical Summary – Inorganic
Background and Rinsate Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type		EPA Region 6 MSSL Residential Soil units Value MG/KG	(b) (6)							
			10/28/2003 Background Soil Sample Primary Sample		10/28/2003 Background Soil Sample Primary Sample		10/28/2003 Background Soil Sample Primary Sample		10/28/2003 Rinsate Sample Primary Sample	
ANALYTE		CAS Number	Result	Val	Result	Val	Result	Val	Result	Val
POTASSIUM	7440097	—	501	L	81.9	L	75.1	L	29.8	U
SODIUM	7440235	—	132	L	110	U	230	L	470	U
VANADIUM	7440622	7.82E+01	15.5		6.1	L	9.5	L	0.90	U
ZINC	7440666	2.35E+04	50.3		51.2		149		22	

U = Undetected at the laboratory reported detection limit (IDL).

J = Result is estimated.

^ = High bias.

v = Low bias.

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Table 6-10
Laboratory Analytical Summary – VOCs
Background Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type units		EPA Region 6 MSSL Residential Soil MG/KG	(b) (6)			
			10/28/2003			
			Background Soil Sample		Background Soil Sample	
			Primary Sample		Primary Sample	
			UG/KG		UG/KG	
ANALYTE		CAS Number	Result		Result	Val
Volatile Organics						
ACETONE	67641	7.04E+04	10	U	14	
METHYLENE CHLORIDE	75092	8.90E+00	3	LJ	10	U

U = Undetected at the laboratory reported detection limit (IDL).

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

Table 6-11
Laboratory Analytical Summary – SVOCs
Background Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type		EPA Region 6 MSSL Residential Soil	(b) (6)					
			10/28/2003 Background Soil Sample		10/28/2003 Background Soil Sample		10/28/2003 Background Soil Sample	
			Primary Sample		Primary Sample		Primary Sample	
			UG/KG		UG/KG		UG/KG	
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val	Result	Val
Semi-Volatile Organics								
ACETOPHENONE	98862	1.74E+03	350	U	43	LJ	350	U
ACENAPHTHENE	83329	3.68E+03	96	LJ	340	U	350	U
FLUORENE	86737	2.64E+03	61	LJ	340	U	350	U
PHENANTHRENE	85018	---	900		88	LJ	350	U
ANTHRACENE	120127	2.19E+04	220	LJ	340	U	350	U
CARBAZOLE	86748	2.43E+01	120	LJ	340	U	350	U
FLUORANTHENE	206440	2.29E+03	1800		220	LJ	61	LJ
PYRENE	129000	2.31E+03	1600		170	LJ	55	LJ
BUTYLBENZYLPHthalate	85687	2.40E+02	350	U	64	LJ	45	LJ
BENZO(A)ANTHRACENE	56553	6.22E-01	900		110	LJ	350	U
CHRYSENE	218019	6.22E+01	980		130	LJ	48	LJ
BIS(2-ETHYLHEXYL)PHTHALATE	117817	3.48E+01	840		170	LJ	160	LJ
BENZO(B)FLUORANTHENE	205992	6.22E-01	930		100	LJ	50	LJ
BENZO(K)FLUORANTHENE	207089	6.22E+00	830		120	LJ	40	LJ
BENZO(A)PYRENE	50328	6.22E-02	1000		120	LJ	40	LJ
INDENO(1,2,3-CD)-PYRENE	193395	6.22E-01	730		80	LJ	350	U

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Table 6-11 (Continued)
Laboratory Analytical Summary – SVOCs
Background Soil Samples

Sample ID Case Number Sample Data Group EPA CLP ID Laboratory ID Date Collected Sample Media Sample QA Type		EPA Region 6 MSSL Residential Soil	(b) (6)					
			10/28/2003 Background Soil Sample		10/28/2003 Background Soil Sample		10/28/2003 Background Soil Sample	
			Primary Sample		Primary Sample		Primary Sample	
			UG/KG		UG/KG		UG/KG	
ANALYTE	CAS Number	MG/KG	Result	Val	Result	Val	Result	Val
DIBENZO(A,H)-ANTHRACENE	53703	6.22E-02	93	LJ	340	U	350	U
BENZO(G,H,I)PERYLENE	191242	---	810		65	LJ	350	U

U = Undetected at the laboratory reported detection limit (IDL).

J = Estimated value.

L = Reported concentration is below the Contract Required Quantitation Limit (CRQL).

7. AIR PATHWAY

The discussion in this section of the report focuses on the air pathway, another potential route of hazardous substance migration from the site. Regional atmospheric conditions, the likelihood of a release to air, and potential air pathway targets are described.

7.1 METEOROLOGICAL CONDITIONS

The average annual precipitation for the Booker Landfill site area is approximately 50.7 inches (Reference 19). The mean annual high temperature for Harris County is approximately 87.4° F, and the mean annual low temperature is approximately 57.2° F (Reference 19). The regional climate is characterized by hot, humid summers with afternoon showers and thunderstorms from June to August. Harris County is characterized by mild winters with sub-freezing temperatures occurring only 5 to 8 days annually on average (Reference 19).

7.2 LIKELIHOOD OF RELEASE

The source soil observed at the Booker Landfill site is not contained to prevent a release to air. However, evidence of a release to air was not observed based on the use of field screening instruments and a significant release to air is not suspected. Information concerning a release to the air pathway is summarized below.

Quantitative air sampling was not completed as part of the PA/SI. However, START-2 performed limited air monitoring during the PA/SI sampling visit. A MultiRAE® multi-gas monitor was used to conduct air monitoring for VOCs during the sampling event. The MultiRAE® was used to measure the relative concentrations of organic vapors in the air for health and safety monitoring purposes. No VOCs readings above 0.0 units above background were observed (Reference 5).

7.3 AIR PATHWAY TARGETS

The population, resources, and sensitive environments within 4 miles of the site are potential targets of a release of hazardous constituents to the air pathway. The targets identified for the air pathway are discussed below.

7.3.1 Nearby Population

The nearby population includes those persons who live within 1 mile of areas of potential soil contamination attributable to the site. Those persons in houses, schools, or daycare facilities within 1 mile of the site may be considered part of the nearby population. Based on 2000 Census data and the MABLE/Geocorr Geographic Correspondence Engine, the nearby population is estimated to be 323 persons within a 0.25-mile radius, 1,513 within a 0.5-mile radius, 5,223 within a 1-mile radius, 34,341 within a 2-mile radius, 85,232 within a 3-mile radius, and 85,088 within a 4-mile radius (Reference 18).

7.3.2 Sensitive Environments

Sensitive environments and resources have been identified previously in this report. Sensitive environments have been described in Subsection 4.3, groundwater pathway targets; Subsection 5.3, surface water pathway targets; and Subsection 6.3, soil exposure targets.

7.4 AIR PATHWAY CONCLUSIONS

A release of hazardous substances to the air pathway has not been documented. No significant odors were observed by START-2 personnel during the site reconnaissance visit or sampling event. A release to air is thought to be of minor concern because no evidence of release to air has been observed based on measurements collected with field screening instruments.

8. CONCLUSIONS

A PA/SI was performed at the Booker Landfill site in Harris County, Texas, to characterize potential sources of hazardous substances, to collect data to characterize the soil exposure pathway, and to summarize background information related to the site. Based on the results of this investigation, the following is concluded:

- The Booker Landfill site is a former municipal waste landfill facility.
- The former landfill is not lined and the source wastes are not contained.
- Based on the available information, observations of site conditions, and the nature of the wastes present at the site, the soil pathway is the migration pathway most likely to be affected.
- START-2 has performed on-site surface soil sampling, soil pathway sampling, and residential and ditch soil sampling.
- No chemical contamination at the source meet the HRS definition of observed contamination, and no concentrations were above EPA Region 6 MSSLs for residential soil exposure.
- Analytical data derived from the soil pathway sampling (ditch samples) indicate the hazardous substances attributable to the site that meet the HRS definition of observed release are not present in the soil pathway where sampled.
- Analytical data derived from residential soil sampling indicate the hazardous substances attributable to the site that meet the HRS definition of observed contamination are not present in soil at the residential properties where sampled.
- A release to air was not documented or suspected based on air monitoring data collected during the October 2003 site reconnaissance visit and sampling event.

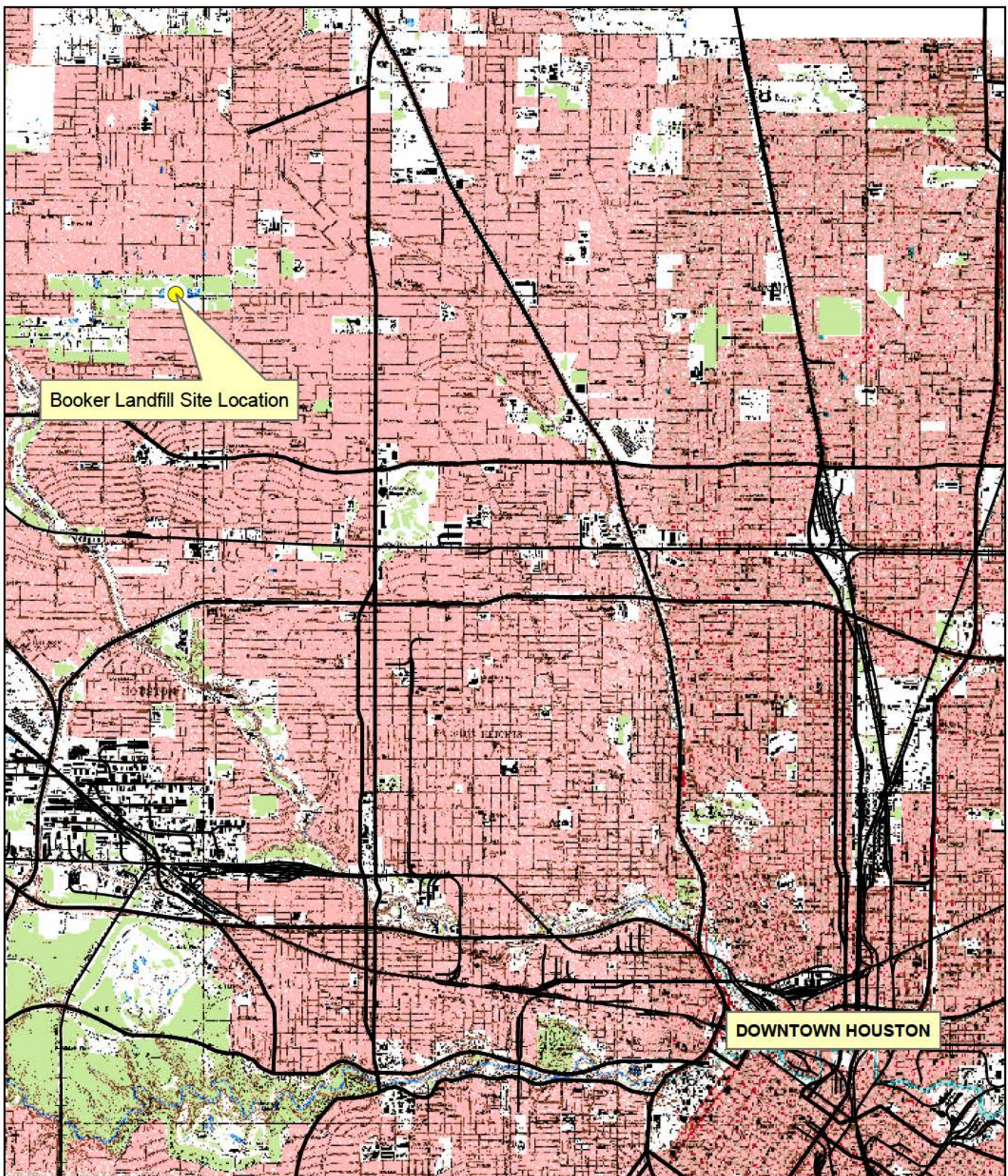
9. REFERENCE LIST

The following references were used to develop the Preliminary Assessment / Site Inspection, Booker Landfill Site, Harris County, Texas. Some references are not provided as appendices to this report. Reference documentation not provided is being maintained in the HRS documentation package supporting the SUPERScreen package developed for the Booker Landfill Site (Appendix D).

- | No. | Reference Title |
|-----|---|
| 1. | U.S. Environmental Protection Agency (EPA). Technical Direction Document (TDD) 06-03-09-0004 and Amendments. (Provided as Appendix E.) |
| 2. | EPA. Final Rule, Hazard Ranking System. <u>Federal Register</u> . FR51532-51667. 14 December 1990. |
| 3. | Quality Assurance Sampling Plan. Booker Landfill Site, Houston, Harris County, Texas. Weston Solutions, Inc. October 2003. (Provided as Appendix A.) |
| 4. | U.S. Geological Survey 1.7 Minute Quadrangles Topographic Map Series. Houston Heights, Texas, 1982, Aldine, Texas, 1982, Hedwig Village, 1982 and Settegast, Texas, 1982. |
| 5. | WESTON (Weston Solutions, Inc.). Site Assessment Logbook for the Booker Landfill Site, Houston, Harris County, Texas. October 2003. (Provided as Appendix B.) |
| 6. | Quantum Environmental Consultants, Inc. Limited Environmental Site Assessment, Quantum Project No. H03004. 8 April 2003. |
| 7. | Photo Log. Booker Landfill Site, Houston, Harris County Texas. (Provided as Appendix C.) |

8. City of Houston Health and Human Services Environmental Health Division of Public Health Engineering. Booker Landfill Sample Results. 20 May 2003, 25 June 2003, and 31 July 2003.
9. Contract Laboratory Data Packages. A4 Scientific and Chemtech. Booker Landfill Site, Houston, Harris County, Texas. Case No. 32306. December 2003.
10. Bureau of Economic Geology at The University of Texas at Austin. Geologic Atlas of Texas, Houston Sheet. 1982.
11. City of Houston Department of Public Works and Engineering. Houston, Harris County, Texas. Water Quality Report. 2002.
12. Texas Water Development Board. Well Information/Ground Water Data website. http://www.twdb.state.tx.us/data/waterwell/well_info.html
13. National Flood Insurance Program, FIRM Flood Insurance Rate Map. Harris County, Texas and Incorporated Areas, Panel 660 of 1135. Map Number 48201C0660 K. Map Revised: 20 April 2000.
14. U.S. Department of Commerce. Rainfall Frequency Atlas of the United States. Prepared by David M. Hershfield, Weather Bureau. Technical Paper No. 40. May 1961.
15. U. S. Fish and Wildlife Service. Basic Wetlands Mapper. <https://mapper.tat.fws.gov>.
16. Texas Parks and Wildlife. Annotated County Lists of Rare Species, Harris County, Texas. Last Revision: 29 October 2003.
17. U.S. Department of Agriculture, Soil Conservation Service. Texas Agricultural Experiment Station and the Harris County Flood Control District. Soil Survey of Harris County, Texas. August 1976.

18. MABLE/Geocorr Geographic Correspondence Engine Version 3.01. Estimated Population in the region of the Booker Landfill site extracted from Census 2000 data.
<http://www.oseda.missouri.edu/plue/geocorr/>
19. U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Historical weather and rainfall data: Climatic Atlas of the United States. 1993.
www.worldclimate.com; www.wxresearch.com/rainfreq.htm.



SOURCE: USGS 7.5' Topographic Map,
Houston Heights, Settegast, Aldine (1982).



0 0.5 1 Miles

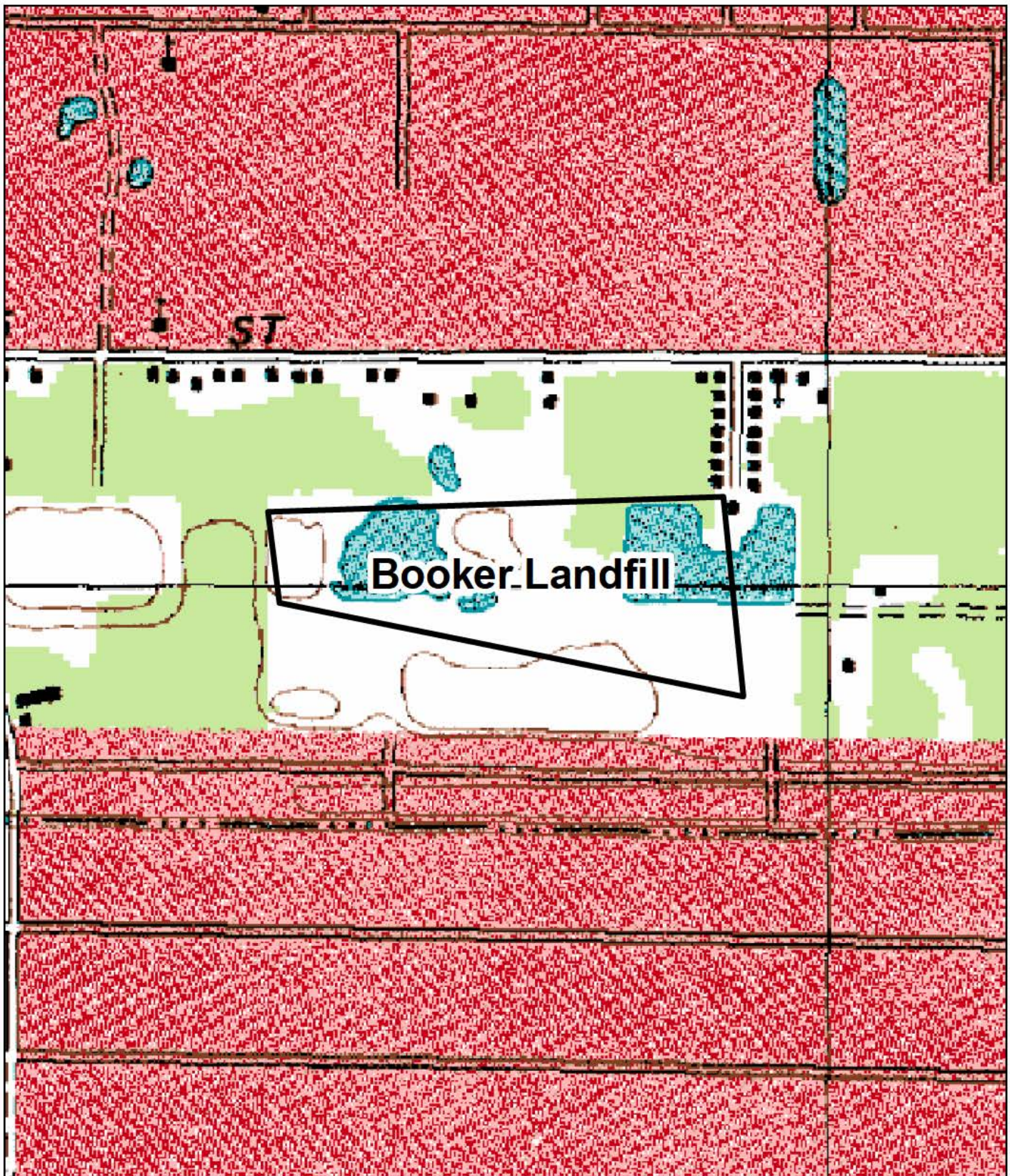
LEGEND

● Site Location

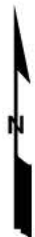


FIGURE 2-1
SITE LOCATION MAP
BOOKER LANDFILL
Harris County, Texas

Date JAN 2004	Project No. 12632.001.137.2125	Scale 1" = 1 Mile
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SOURCE: USGS 7.5' Topographic Map,
Houston Heights, (1982).



0 250 500 Feet

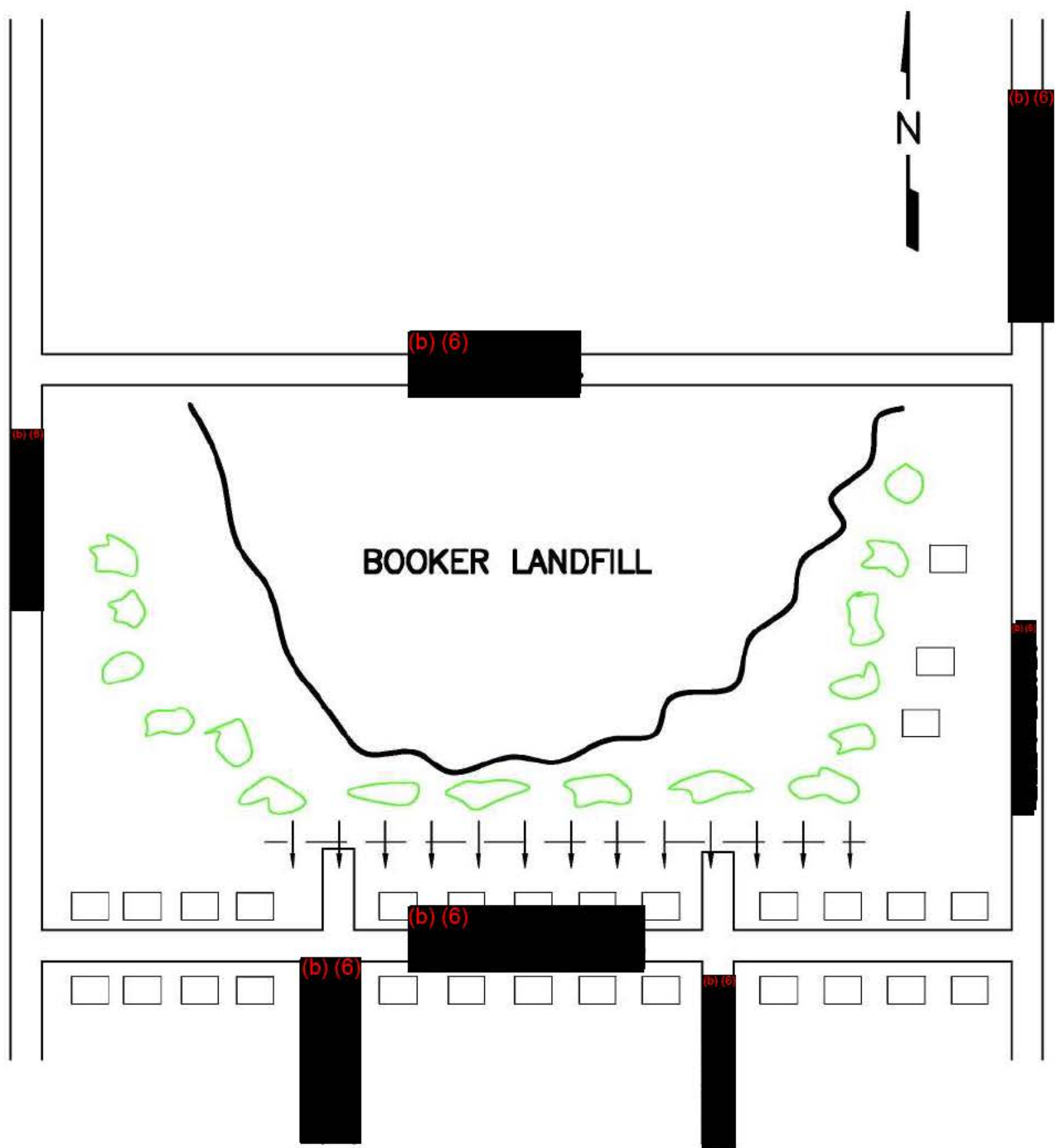
LEGEND

 Property Boundary



FIGURE 2-2
SITE AREA MAP
BOOKER LANDFILL
Harris County, Texas

Date OCT 2003	Project No. 12632.001.137.2125	Scale 1" = 500 ft.
------------------	-----------------------------------	-----------------------



LEGEND






-  RESIDENCES
-  VEGETATION
-  BARREN SOIL
-  DITCH
-  FLOW DIRECTION



FIGURE 2-3

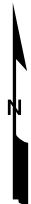
SITE PLAN MAP BOOKER LANDFILL

HOUSTON HARRIS COUNTY, TEXAS

DATE OCT 03	PROJECT NO. 12632.001.137.2125	SCALE NOT TO SCALE
----------------	-----------------------------------	-----------------------

(b) (6)

SOURCE: DOQQ, Texas Natural Resources
Information System (TNRIS), 1995.



0 350 700 1,050 1,400 Feet

LEGEND

Sample Locations

• Source

Property Boundaries

Streets



FIGURE 3-1
SOURCE SAMPLE
LOCATION MAP
BOOKER LANDFILL
Harris County, Texas

DATE
JAN 2004

Project No.
12632.001.137.2125

Scale
1" = 650 ft.

(b) (6)

SOURCE: DOQQ, Texas Natural Resources
Information System (TNRIS), 1995.



0 350 700 1,050 1,400 Feet

LEGEND

Sample Locations

- Ditch
- Residential

-  Property Boundaries
-  Streets



FIGURE 6-1
DITCH AND RESIDENTIAL
SAMPLE LOCATION MAP
BOOKER LANDFILL
Harris County, Texas

DATE
JAN 2004

Project No.
12632.001.137.2125

Scale
1" = 650 ft.

(b) (6)

SOURCE: DOQQ, Texas Natural Resources
Information System (TNRIS), 1995.



0 350 700 1,050 1,400 Feet

LEGEND

Sample Locations

• Background

□ Property Boundaries

— Streets



FIGURE 6-2
BACKGROUND SAMPLE
LOCATION MAP
BOOKER LANDFILL
Harris County, Texas

DATE
JAN 2004

Project No.
12632.001.137.2125

Scale
1" = 650 ft.

Appendix A

Quality Assurance Sampling Plan for Booker Landfill Site

COMBINED PRELIMINARY ASSESSMENT / SITE INSPECTION
DRAFT QUALITY ASSURANCE SAMPLING PLAN
BOOKER LANDFILL
HOUSTON, HARRIS COUNTY, TEXAS

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY

Henry Thompson, Project Officer
1445 Ross Avenue
Dallas, Texas 75202

Contract No. 68-W-01-005
Technical Direction Document No. 06-03-09-0004
WESTON Work Order No. 12632.001.137.2125
Document Control No.
CERCLIS No. TXN000605565
EPA SAM: Bill Rhotenberry
START-2 PTL: Michelle Brown
FPN No. N/A
NRC No. N/A

Prepared by

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16 October 2003

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START-2 Project Team Leader

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Table 3-2	Sampling and Analysis Requirements

1. INTRODUCTION

1.1 PURPOSE

Weston Solutions, Inc. (WESTON®) Superfund Technical Assessment and Response Team (START-2) has been tasked by the U.S. Environmental Protection Agency (EPA) Region 6 under Contract Number 68-W-01-005, Technical Direction Document (TDD) 06-03-09-0004 to perform a Combined Preliminary Assessment / Site Inspection (PA/SI) at the Booker Landfill site, Houston, Harris County, Texas. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Identification Number assigned to the site is TXN000605565. START-2 has prepared this PA/SI Quality Assurance Sampling Plan (QASP) to describe the technical scope of work for field activities to be completed as part of this investigation.

1.2 OBJECTIVES

START-2 is providing technical assistance to EPA Region 6 for the performance of a PA/SI at the Booker Landfill Site. The objective of the PA/SI is to identify potential threats that hazardous substances attributable to the site may pose to human health and the environment by assessing the existence and migration of hazardous substances related to the site and by identifying the receptors, or targets, potentially exposed to the hazardous substances. START-2 will collect and analyze surface soil samples to characterize potential hazards. In general, the samples collected will be analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, cyanide, and 23 metals. The data generated during this assessment will be used to develop a SuperScreen HRS scoring for the Booker Landfill site.

1.3 PROJECT TEAM

The project team will consist of Steve Michell, P.G., START-2 Deputy Program Manager; Michelle Brown, START-2 Project Team Leader (PTL) and Field Team Leader (FTL); a Sample Manager; and additional START-2 sampling personnel as necessary. The FTL will be responsible for the technical work performed in the field and will serve as the START-2 liaison to EPA Region 6 and Texas Commission on Environmental Quality (TCEQ) personnel during the site activities. The FTL

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will collect samples as necessary, log the activities at each sample location in the field logbook, and verify the sample documentation. The Sample Manager will be responsible for accurate chain-of-custody documentation for the samples during the investigation, as well as the packaging and shipping of the samples to the designated laboratory. The sampling personnel will be responsible for collecting samples as directed by the EPA representative and START-2 FTL according to standard operating procedures (SOPs).

1.4 QASP FORMAT

This QASP has been organized in a format that is intended to facilitate the PA/SI. The QASP is organized as follows:

- Section 1 - Introduction
- Section 2 - Site Background
- Section 3 - Sampling Approach and Procedures
- Section 4 - Quality Assurance

All tables are included at the end of each representative section. All figures and appendices are available as PDF files on the Team Link website. The following is a list of appendices:

- Appendix A - Site Access Agreement Letters
- Appendix B - Site-Specific Data Quality Objective
- Appendix C - Standard Operating Procedures

2. SITE BACKGROUND

The Booker Landfill site is a former municipal landfill. Information regarding the site location and description, site history, and site features are presented in the following subsections. This information was obtained based on discussions with Bill Rhotenberry, the EPA Site Assessment Manager (SAM), and Chuck Roosevelt, a representative of City of Houston; a review of available EPA and City of Houston files; and the START-2 site reconnaissance conducted on 2 October 2003.

2.1 SITE LOCATION

The Booker Landfill site is located south of Tidwell Road, between Ella Boulevard and Rosslyn Road, in Houston, Harris County, Texas. The former entry to the landfill is at the northeast corner of the site at approximately Latitude 29.84664° North and Longitude 95.73362° West and is referenced on the Houston Heights, TX, U.S. Geological Survey (USGS) 7.5-minute quadrangle. A site location map is provided as Figure 2-1. Figure 2-2 depicts a site area map.

2.2 SITE HISTORY AND DESCRIPTION

The Booker Landfill site (also known as the West Donovan Landfill) was an un-permitted municipal landfill operated by Mr. Raymond Booker from the late 1960s to the early 1970s. The Booker Landfill site is approximately 30 acres in size and is situated in a suburban area. (b) (6) borders the site on the north, (b) (6) on the west (b) (6) on the east and (b) (6) on the south. Residences are located west of (b) (6) and north of (b) (6). No buildings are on the property, and the entire site is unfenced. The site consists of broad, flat areas of barren soil caused by what appears to be the recent grading of fill soil. The only visible trash observed during the START 2 site reconnaissance was found in a ditch running along the south end of the site, adjacent to several residences, whose backyards abut the site. Areas along the ditch, and around the perimeter of the site, and between barren areas are thickly vegetated.

The topography of the site is flat, with a slight slope north towards (b) (6) and with a steep incline from a berm on the south towards the ditch. At its highest point, on the southwest edge of

the property, the site is approximately 15 feet above the ditch. The ditch conveys runoff from south of the Booker Landfill site toward (b) (6) through two intersecting streets, (b) (6) to the west and (b) (6) to the east. Stormwater eventually enters the city drainage system off (b) (6) and flows into Whiteoak Bayou.

2.3 PREVIOUS INVESTIGATIONS

Because of health concerns posed by local residences, Quantum Environmental Consultants, Inc. conducted a Limited Environmental Site Assessment (ESA) for the Ella Park Terrance Civic Club in April 2003. As part of the investigation, Quantum provided preliminary data on potential contaminants that may have migrated from Booker Landfill site and impacted surface soils and standing surface water in the area of the (b) (6) located along (b) (6). Based on the limited scope of this April 2003 ESA, sufficient data were not available to determine whether the contamination at the subject property was due to offsite surface migration from the former landfill property or from other potential sources. Since the extent of contamination in the soil was not determined, further assessment was recommended.

Quantum collected samples from the site and surrounding properties in May 2003. Soil samples were collected from eight residential properties on the north and south side of (b) (6) and on the south side of the Booker Landfill site. Surface water samples were collected from standing water in two locations on or near the (b) (6) residential properties. All samples were analyzed for volatile organic compounds (VOCs), semi-volatile compounds (SVOCs), Total petroleum hydrocarbons (TPH), and metals. The surface water samples were also analyzed for poly-chlorinated biphenyls (PCBs). Analytical results of the soil samples collected indicated VOCs and SVOCs were below laboratory detection limits except for Benzo (g,h,i) perylene. TPH and metals (arsenic, barium, cadmium, chromium, and lead) were detected in soil. Barium, cadmium, and lead concentration were above TCEQ Tier 1 Concentration Levels (PCLs) for residential, 0.5-acre source area, groundwater-protective soil concentration. TPH levels were also shown to be elevated in some sampling locations. Samples obtained from the standing water had concentrations below detection limits for PCBs, VOCs, SVOC, and TPH. Barium was detected in the surface water

samples, but below TCEQ PCLs for Residential, 0.5-acre source area, groundwater-protective soil concentrations.

2.4 POTENTIAL SOURCES OF HAZARDOUS SUBSTANCES

Based on the results of the previous investigation described above, the following chemicals have been reported to be associated with this source:

- Barium as high as 1140 mg/kg
- Cadmium as high as 6.4 mg/kg
- Lead as high as 86.2 mg/kg

The field investigation for this PA/SI of the Booker Landfill site is designed (1) to further examine the extent, concentration or types of wastes present on-site and to identify sources of hazardous substances, and (2) to evaluate whether hazardous substances may be migrating from the site such that potential receptors are affected.

2.5 POTENTIAL MIGRATION AND EXPOSURE PATHWAYS

The migration of and exposure to any hazardous substances at the site may occur through the groundwater, surface water, soil exposure, or air pathways. Available information about each pathway, the suspected likelihood of a release, and the potential for exposure are summarized in the following subsections. The pathway information presented is preliminary and will be further assessed during the PA/SI.

2.5.1 Groundwater Pathway

Regionally, 35 percent of potable groundwater in Harris County is pumped from the Chicot and Evangeline aquifers. The Chicot Formation overlies the Evangeline Formation and the aquifers may be interconnected. The Chicot aquifer is the shallower of the two units; the top of the Chicot aquifer is approximately 175 feet bgs in the site area. The Chicot aquifer extends to approximately 400 feet bgs. The Evangeline aquifer underlies the Chicot aquifer, extend to approximately 1,000 feet bgs.

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The Chicot-Evangeline aquifer system is overlain by the Beaumont Formation. The Beaumont Formation is a Pleistocene-aged clayey soil formation known for its shrink-swell properties and is considered a confining layer. The Chicot-Evangeline aquifer system is not in communication with shallow groundwater-bearing zones that overlie the Beaumont Formation.

Based on STATR-2's experience, the depth to the shallowest groundwater-bearing zone in this area of Houston is approximately 15-30 feet below ground surface (bgs). However, the depth groundwater used as a drinking water supply in this geologic area is believed to be approximately 300 feet bgs based on reported local well depths. Releases to the shallow groundwater-bearing zone may have occurred on-site because the areas containing the wastes at the landfill do not have engineered liners. However, significant release to deeper groundwater used for drinking water is not suspected.

No public water wells are located within 4 miles of the Booker Landfill site. The surrounding residential areas are all reported to be served by the City of Houston municipal water system. Based on review of information available from the Texas Water Development Board (TWDB) groundwater and water well database, approximately 4 water wells have been identified within 1 mile of the Booker Landfill site. None of these wells are domestic drinking water wells. No water wells are known to exist on-site.

2.5.2 Surface Water Pathway

No surface water bodies are located in the immediate vicinity of the site. Any discharges from the sources at the site most likely would flow overland towards the north and (b) (6) and into the city stormwater system. At the south boundary of the property drainage occurs into the ditch just north of the residential properties off (b) (6) and flows down either (b) (6) or (b) (6) and into the city stormwater system off (b) (6). The flow eventually enters into Whiteoak Bayou.

2.5.3 Soil Exposure Pathway

Affected soil potentially may be present in areas where landfilled municipal waste was disposed on-

site. No residences are located on-site, and no permanent, full-time personnel are present on-site. Possible receptors include residences that abut the site and trespassers may be exposed to potentially affected soil since the site is unfenced. Population data will be obtained during the PA/SI.

2.5.4 Air Pathway

At this time, a significant release to air is not suspected to occur at the Booker Landfill site due to the site containing municipal wastes and there being a lack of significant odors during the site reconnaissance. Potential targets of any releases to the air include area residences. Nearby population data will be obtained during the PA/SI.

3. SAMPLING APPROACH AND PROCEDURES

This PA/SI is being performed to evaluate the possibility that there are hazardous substances present in the potential source areas and exposure pathways at or near the Booker Landfill site. The primary chemicals of concern at the site are believed to be Target Analyte List (TAL) metals, and possibly VOCs, SVOCs and TPH. It is currently unknown if there are any other hazardous substances present. The field investigation activities that will be conducted to assess the site are presented in this section.

3.1 DATA QUALITY OBJECTIVES

The objectives of the sampling activities described in this QASP are to characterize potential chemicals of concern in the source area and migration pathways associated with the site. Based on discussions with the EPA Site Assessment Manager (SAM), the following data quality objective (DQO) has been established for this project:

1. Assess the concentrations of VOCs, SVOCs, TAL metals, cyanide, PCBs, and pesticides in surface soils. The areas that will be sampled include the landfill, the ditch south of the site and some residential yards adjacent to the site.

Additional sampling may be performed upon request by the EPA SAM. The data quality objective is described in more detail in Appendix B.

3.2 MOBILIZATION

The START-2 field team will mobilize the required equipment and personnel to the site as scheduled with the EPA SAM and TCEQ. The field team will perform safety planning, community relations assistance, command post establishment, and review work activities as part of the mobilization effort before sampling activities are initiated.

3.2.1 Health and Safety Plan Implementation

The field activities will be conducted in accordance with the site-specific Health and Safety Plan (HASP). A designated Site Health and Safety Coordinator (SHSC) will be responsible for

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implementation of the HASP during the field activities. START-2 personnel will conduct work according to the requirements of the HASP. In accordance with the START-2 general health and safety operating procedures, the field team will drive the route to the hospital specified in the HASP prior to initiating intrusive work.

3.2.2 Community Relations

It is anticipated that TCEQ and/or EPA representatives will be present during sampling activities and the START-2 sampling team will defer community relations management to them. The START-2 FTL will defer conversations with the public to an EPA Region 6 representative or the TCEQ community relations liaison. If neither EPA nor TCEQ personnel are present, the START-2 FTL, under the guidance of the START-2 Deputy Program Manager, will manage community relations as directed by EPA Region 6 personnel. The START-2 FTL and/or Deputy Program Manager will report any significant discussions with the public to the EPA SAM as soon as possible.

At this time, a signed site access agreement for the Booker Landfill Property has not been obtained because ownership contacts have been difficult to establish. START-2 and EPA will continue to pursue site access agreement. TCEQ is also participating in the investigation of the Booker Landfill Site, and it is the understanding of START-2 that, if signed site access is not obtained, START-2 will access the site under the authority of the TCEQ when TCEQ representatives are on-site. START-2 will not enter any site without a signed site access agreement or without the presence of TCEQ representatives unless so directed by EPA. Access agreements will be obtained while in the field from the residential properties. These access agreements have not yet been obtained, but will be attached as Appendix A as they are received.

3.2.3 Field Activities Review Meeting

The START-2 FTL will conduct a meeting with the entire field team to familiarize them with the scope of work, discuss the planned field activities, and review the project HASP and other relevant START-2 operating procedures before initiating work. The roles and responsibilities of the field team members will be assigned by the FTL during this meeting.

3.2.4 Command Post and Zone Establishment

The field team will establish a command post at the site upon arrival. Support zones, a contamination reduction zone, and an exclusion zone for the work will be established according to the HASP. The safety requirements for working in each area of the site will be reviewed before the initiation of intrusive activities.

3.2.5 Sample Location Reconnaissance

On 2 October 2003, START-2 personnel completed an initial reconnaissance of the site to determine possible sample locations. Based on this reconnaissance and consultation with the EPA SAM, START-2 has identified potential sample locations for the characterization of the source area and surface soil pathway. The field team will review selected sample locations upon arrival at the site to confirm their accessibility for sampling. Final sample locations will be determined in the field.

Deviations from sample locations or number of samples may be required due to new observations made prior to sampling, to information obtained in the field that warrants an altered or additional sampling point, to difficulty in sample collection, or to limited access. Any necessary and significant deviations from the sample locations identified in the work plan will be reported to the START-2 Deputy Program Manager before sampling begins. The EPA SAM will be notified, and concurrence will be obtained for significant deviations from the planned sampling points or number of samples proposed.

3.3 SAMPLING AND ANALYSIS APPROACH

START-2 anticipates performing sampling of the surface soil pathway to obtain the data needed to meet the objectives of this investigation. The groundwater, surface water and air pathways will not be sampled by START-2 at this time. The nature and extent of START-2 sampling locations will be determined with the EPA SAM prior to sampling. Sampling will be performed in general accordance with applicable SOPs (Appendix C). Additional sampling may be performed upon request by the EPA SAM. A summary of the sampling to be performed and the rationale for sampling at each location is provided in Table 3-1. The planned sample locations are shown in

Figure 3-1.

3.3.1 Source Characterization Sampling

START-2 will collect discrete samples to potential source soil exposed at the ground surface at the Booker Landfill Site. START-2 will collect four soil source characterization samples one field duplicate, as follows:

- One source characterization soil sample will be collected from the northeast corner of the former landfill site.
- One source characterization soil sample will be collected from southeast corner of the former landfill site.
- One source characterization soil sample will be collected from the northwest corner of the former landfill site.
- One source characterization soil sample will be collected from the southwest corner of the former landfill site.
- One field duplicate soil sample will be collected in conjunction with one of the samples described above. The sample location of the field duplicate will be determined in the field.

Proposed source characterization soil sample locations are illustrated on Figure 3-1; the exact locations of these samples will be determined in the field. Source characterization soil samples will be targeted to areas believed most likely to contain hazardous substances based on visual assessment of soil conditions, runoff patterns, etc. Source characterization soil samples will be collected at a depth interval from 0 to 6 inches bgs, if appropriate. Source characterization soil samples will be submitted to the laboratory for the analyses listed in Table 3-1. A Global Positioning System (GPS) receiver will be used in the field to record the exact location of each sample collected. Deviations from the proposed sampling locations, depicted in Figure 3-1, are not anticipated, but may occur because of field observations or access difficulties. Any significant deviations from the proposed sampling plan will be discussed with the EPA SAM.

Source characterization soil samples will be delivered to the participating laboratory for Target Compound List (TCL) VOCs, TCL SVOCs, TCL pesticides, PCBs, cyanide, and TAL metals

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analyses. The EPA Contract Laboratory Program (CLP) will be utilized unless otherwise directed by the EPA SAM. The analyses for the source characterization samples are listed on Table 3-1. Laboratory methods and sampling requirements are summarized in Table 3-2.

3.3.2 Background Soil Sampling

START-2 will collect three background soil samples. The background samples will be collected in undisturbed, visually clear areas of right-of-ways or at nearby properties where access can be obtained. The drainage ditch to the east of the site may be one location to collect these samples. The samples will be collected at a depth of 0 to 6 inches using hand augers and disposable plastic scoops. The background sample locations are not shown on Figure 3-1 as they will be determined in the field.

3.3.3 Surface Soil Sampling

START-2 will collect a total of 12 surface soil samples from the (b) (6) properties and the ditch between the site and (b) (6) properties. The samples will be collected approximately at the locations shown on Figure 3-1 from a depth of 0 to 6 inches below grade. The samples will be collected as discrete samples and will not be composited. The samples will be collected with dedicated plastic scoops, placed into pre-cleaned containers, and then double bagged for shipping. The samples for all analyses except VOCs should be homogenized prior to placement in the sample jar. Samples for VOC analyses should not be homogenized and will be collected using the Encore® sampling technique. The planned sample locations are shown on Figure 3-1 but final locations will depend on the ability to get property access. The sampling rationale is described in Table 3-1. Laboratory methods and sampling requirements are summarized in Table 3-2.

When samples are collected to assess the presence of soil contamination and the potential soil exposure threat associated with a residence or work place, the field team will attempt to collect the soil samples from locations that meet the following criteria:

- Sample locations should be at properties for which sampling permission has been granted by the landowner.
- Sample locations should be within 200 ft of the residence or work place on the property.
- Sample locations should be placed in areas where the presence of contamination is suspected to be most likely (based on topography, etc.) within the limits of the above criteria.
- Sample locations should be in areas where sampling can be performed without damaging features such as gardens, driveways, or obvious heavy-traffic areas.

Soil generated by the sampling process that is not retained as a sample will be replaced in the boring from which it came in order to fill the holes created. If necessary, potting soil will be added at the surface to completely fill the holes, and the sod will be replaced. START-2 does not expect to generate soil that will require off-site disposal.

3.4 INVESTIGATION-DERIVED WASTES (IDW)

It is anticipated that investigation-derived wastes (IDWs) such as personal protective equipment (PPE) and disposable sampling equipment will be generated during the project. After sampling, surface soil sample cuttings will be returned to the hole from which they were generated. START-2 does not anticipate generating any equipment decontamination rinsate water, as disposable sampling equipment will be used. Disposable sampling equipment and used PPE will be containerized using garbage can liners and disposed off-site. It is anticipated that minimal amounts of IDW will be generated. If decontamination fluids are generated, they will be stored on-site in a marked, 55-gallon drum, and disposed after the sampling results are received.

3.5 QUALITY ASSURANCE SAMPLES

As part of the sampling activities described above, START-2 will collect QA/QC samples. The data obtained from duplicate samples will be used to assist in the quality assurance of the sampling and laboratory analytical procedures, allowing an evaluation of the reproducibility of the results. Duplicates will be collected at locations selected by the START-2 FTL. Efforts will be made to collect duplicate samples in locations where the presence of hazardous substances is most suspected. The samples will be analyzed for the same parameters as the parent samples. Duplicate samples will be collected as follows:

- One blind field duplicate soil sample will be collected for every 20 soil samples. The duplicates will be collected at a locations selected by the START-2 FTL. The data obtained from this sample will be used to assist in the quality assurance of the sampling procedures and laboratory analytical data by allowing an evaluation of the reproducibility of the results. Efforts will be made to collect the duplicate sample in a location where there the presence of hazardous substances is most suspected. The samples will be analyzed for the same parameters as the other soil samples.
- Extra sample volume will be collected for laboratory matrix spike (MS) and matrix spike duplicate (MSD) analyses. The extra volume will consist of triple the sample volume for organics, and double the sample volume for inorganics, at a rate of 1 extra volume per 20 samples of a given matrix unless otherwise directed by EPA Houston laboratory personnel.
- Temperature blanks will be placed in each sampling cooler. Temperature blanks will be prepared by pouring deionized water into a 40 mL glass VOA vial or will be provided by the designated laboratory.
- One rinsate blank will be collected. The rinsate blank will be collected by pour deionized water over a decontaminated sampling device and collecting that rinsate water in sample containers. The rinsate blank will be analyzed for the full suite of TCL organic and TAL inorganic parameters.

3.6 SAMPLE MANAGEMENT

3.6.1 Sample Identification

Each sample will be appropriately documented and identified using the appropriate Contract Laboratory Program (CLP) Forms II Lite labels, tags, and forms. Surface soil samples will receive a sample number beginning with BLSS-xx, where 'xx' represents the discrete sequential sample station number. Sample numbers will be appended with a suffix in the following manner: 'A' represents a normal field sample, 'B' represents a duplicate field sample, 'C' represents a trip blank, and 'D' represents a Field Blank. An example of a normal soil sample collected from the first station is: BLSS-01-A.

3.6.2 Sample Preservation, Containers, and Hold Times

Once collected, the samples will be stored in coolers and maintained on ice at approximately 4 C while at the site and until they are submitted to the laboratory for analysis. The samples will be sent to the participating laboratory via Federal Express each day during sampling activities. Table 3-2 lists the typical required containers, maximum holding times, and preservation methods for planned sample analyses. Samples that have been analyzed will be disposed of by the designated laboratory in accordance with the laboratory SOPs.

3.6.3 Sample Handling Procedures

Samples will be collected using equipment and procedures appropriate to the matrix, parameters, and sampling objectives. The volume of the sample must be sufficient to perform the analysis requested. Samples will be stored in the proper containers and preserved in a manner appropriate for the analysis to be performed.

Clean decontaminated sampling equipment and sample containers will be maintained in a clean, segregated area. Samples will be collected with new, pre-cleaned, disposable sampling equipment. Samples collected for laboratory analysis will be placed directly into pre-cleaned, unused glass or plastic containers. Sampling personnel will change gloves between each sample collection/handling.

Samples will be assembled and catalogued prior to shipping (SOPs 1101.01 and 1102.01) to the designated laboratory.

3.7 DECONTAMINATION

It is anticipated that only disposable sampling equipment (soil samplers) will be used during the Booker Landfill site PA/SI sampling event. In the event that nondisposable sampling equipment is used, sampling equipment will be thoroughly decontaminated before initial use, between uses, and at the end of the field investigation. Equipment decontamination will be completed in the following manner:

- The equipment will be washed in a potable water and detergent (e.g., Liquinox) solution.
- The equipment will be rinsed with deionized or distilled water.
- The equipment will be allowed to air dry.
- Clean equipment will be wrapped or otherwise contained to keep it clean for reuse.

Decontamination, if necessary, will be conducted using 5-gallon buckets, 55-gallon drums, and a temporary decontamination area constructed in an area identified prior to the beginning of field activities. The fluids and excess soil/sediment generated from equipment decontamination will be placed in a drum and staged on-site. The drum will be labeled with the name of the site, the contents, sampling location, and date. The analytical data from collected samples will be reviewed after completion of the field activities and disposal options will be evaluated accordingly.

TABLE 3-1
Sampling Rationale Summary

Sample Station Number	Sample Type	Analysis	Rationale for Sample Collection
(b) (6)	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize Potential Source Area,
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize Potential Source Area,
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize Potential Source Area,
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize Potential Source Area,
	Surface Soil Duplicate	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Discrete Soil QC sample, Location to be Determined in the Field
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Background Soil Sample
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Background Soil Sample
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Background Soil Sample
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize southern site ditch
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize southern site ditch
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize southern site ditch
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize southern site ditch
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize southern site ditch
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize (b) (6) Properties
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize (b) (6) Properties
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize (b) (6) Properties
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize (b) (6) Properties

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TABLE 3-1 (CONTINUED)
Sampling Rationale Summary

Sample Station Number	Sample Type	Analysis	Rationale for Sample Collection
(b) (6)	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize (b) (6) Properties
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize (b) (6) Properties
	Surface Soil	VOCs, SVOCs, PCBs, Pesticides, TAL Metals, Cyanide	Characterize (b) (6) Properties

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TABLE 3-2
Sampling and Analysis Requirements

		SOLID MATRIX		
Analysis	Method No.	Bottles Required	Preservation Required	Holding Time
TCL VOCs	EPA Method SW8260B	Encore [®] Samplers	Ice to 4 C	48 hours until extraction
TCL SVOCs	EPA Method SW8270C	8 oz. Glass Jars	Ice to 4 C	14 days until extraction and 40 days after extraction
TCL Pesticides and PCBs	EPA Method SW8081A-(PEST), Method SWA8082-(PCBs)	8 oz. Glass Jars	Ice to 4 C	14 days until extraction and 40 days after extraction
TAL Metals	EPA Method SW6010B-(metals), SW9010B-(cyanide)	8 oz. Glass Jars	Ice to 4 C	180 days

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4. QUALITY ASSURANCE

Quality assurance will be conducted in accordance with the WESTON Programmatic Quality Assurance Project Plan (QAPP), dated May 2003. The START-2 FTL will be responsible for QA/QC field investigation activities. The designated laboratory utilized during the investigation will be responsible for QA/QC related to analytical work. START-2 will collect samples for blind analyses and inter sample comparisons to verify that laboratory QA/QC is consistent with the required standards as discussed in the QAPP.

4.1 SAMPLE CUSTODY PROCEDURES

Because of the evidentiary nature of sample collection, the possession of samples must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. After sample collection and identification, samples will be maintained under the chain-of-custody procedures. If the sample collected is to be split (laboratory QA/QC), the sample will be allocated into similar sample containers. Sample labels completed with the same information as that on the original sample container will be attached to each of the split samples. Personnel required to package and ship coolers containing potentially hazardous material will be trained accordingly.

The chain-of-custody (COC) procedures are documented in SOP 1101.01 (Appendix C) and will be made available to all personnel involved with the sampling. A typical chain-of-custody record included in SOP 1101.01 will be completed each time a sample or group of samples is prepared for shipment to the laboratory. The record will repeat the information on each sample label and will serve as documentation of handling during shipment. A copy of this record will remain with the shipped samples at all times, and another copy will be retained by the member of the sampling team who originally relinquished the samples. START-2 personnel will complete a COC form for all samples sent to a START-2 designated off-site laboratory.

Samples relinquished to the participating laboratories will be subject to the following procedures for transfer of custody and shipment:

- Samples will be accompanied by the chain-of-custody record. When transferring possession of samples, the individuals relinquishing and receiving the samples will sign, date, and note

the time of the sample transfer on the record. This custody record documents transfer of sample custody from the sampler to another person or to the laboratory.

- Samples will be properly packed for shipment and dispatched to the appropriate laboratory for analysis with separate, signed custody records enclosed in each sample box or cooler. Sample shipping containers will be custody-sealed for shipment to the laboratory. The preferred procedure includes use of a custody seal wrapped across filament tape that is wrapped around the package at least twice. The custody seal will then be folded over and stuck to it to ensure that the only access to the package is by cutting the filament tape or breaking the seal to unwrap the tape.
- If sent by common carrier, a bill of lading or air bill will be used. Bill of lading and air bill receipts will be retained in the project file as part of the permanent documentation of sample shipping and transfer.

SOPs 1101.01 and 1102.01 describe these procedures in more detail (Appendix C).

4.2 PROJECT DOCUMENTATION

4.2.1 Field Documentation

Field documentation will be completed legibly and in black ink. Any corrections or revisions will be made by lining through the original entry, initialing, and dating the change. The following field documentation will be maintained.

4.2.2 Field Logbook (SOP 1501.01)

The field logbook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. All entries will be signed by the individuals making them. Entries should include, at a minimum, the following:

- Site name and project number.
- Names of personnel on-site.
- Dates and times of all entries.
- Description of all site activities, including site entry and exit times.

- Noteworthy events and discussions.
- Weather conditions.
- Site observations.
- Identification and description of samples and locations.
- Dates and times of sample collections and chain-of-custody information.
- Records of photographs.
- Site sketches.

4.2.3 Sample Labels

Sample labels will be securely affixed to the sample container. They will clearly identify the particular sample and include the following information:

- Site name and project number.
- Date and time the sample was collected.
- Sample preservation method.
- Analysis requested.
- Sampling location.

4.2.4 Chain-of-Custody Record (SOP 1101.01)

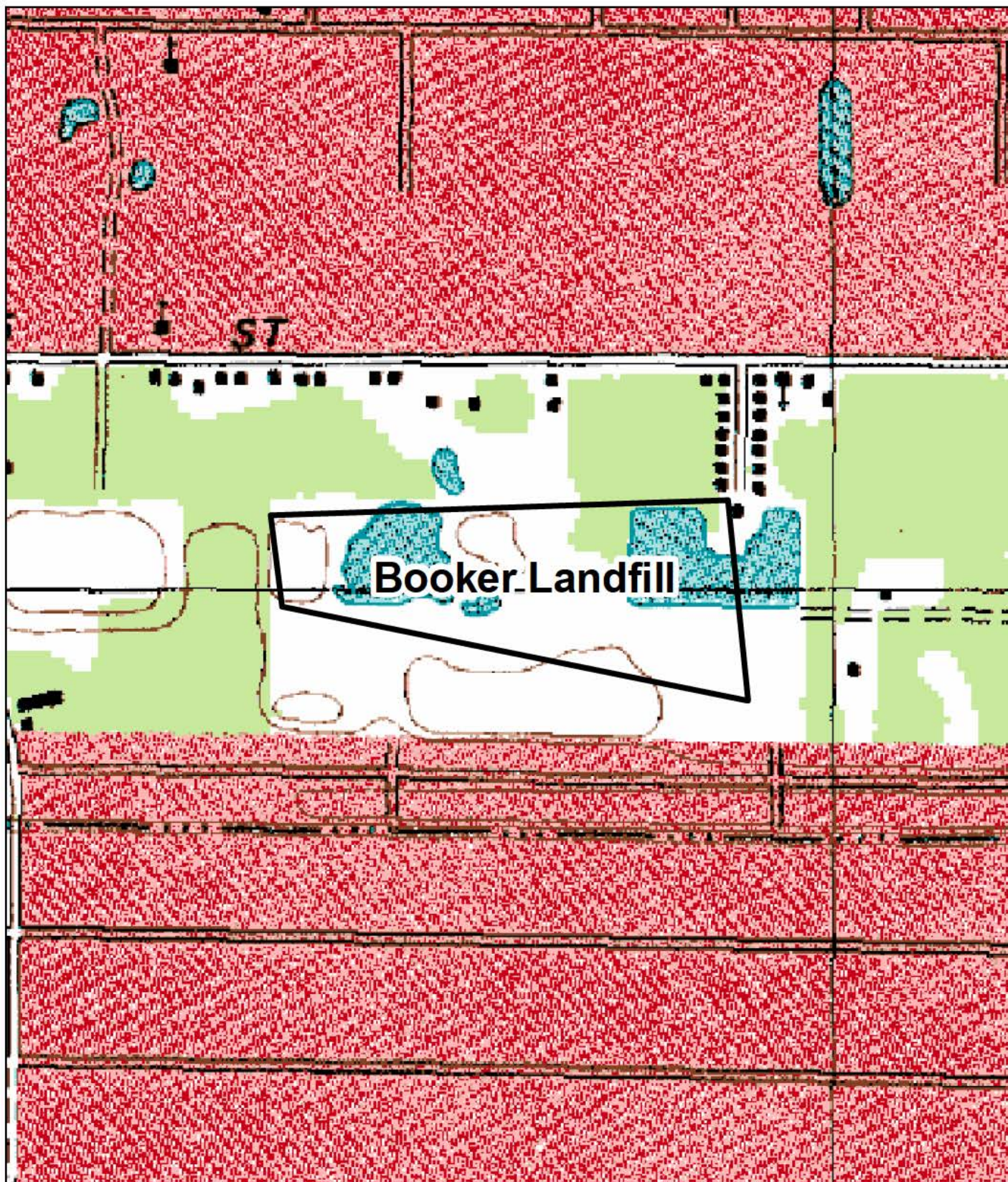
A Chain-of-Custody will be maintained from the time of sample collection until final deposition. Every transfer of custody will be noted and signed for and a copy of the record will be kept by each individual who has signed it. The Chain-of-Custody is discussed in Subsection 4.1 Sample Custody Procedures.

4.2.5 Custody Seal

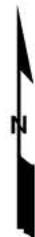
Custody Seals demonstrate that a sample container has not been opened or tampered with. The individual who has custody of the samples will sign and date the seal and affix it to the container in such a manner that it cannot be opened without breaking the seal.

4.2.6 Photo Documentation

START-2 will take photographs to document site conditions and activities as site work progresses. Initial conditions will be documented by photographing features that define the site-related contamination or special working conditions. Representative photographs should be taken of each type of site activity. The photographs should show typical operations and operating conditions as well as special situations and conditions that may arise during site activities. Site final conditions will be documented as a record of how the site appeared at completion of the work. Photographs will be taken with either a film camera or digital camera capable of recording the date on the image. Each photograph will be recorded in the logbook with the location of the photographer, direction the photograph was taken, the subject of the photograph, and its significance (i.e., why the picture was taken). Where appropriate, the photograph location, direction, and subject will be depicted on a site sketch. SOPs 1502.01 and 1502.02 discuss photo documentation in more detail (Appendix C).



SOURCE: USGS 7.5' Topographic Map,
Houston Heights, (1982).



0 250 500 Feet

LEGEND


 Property Boundary

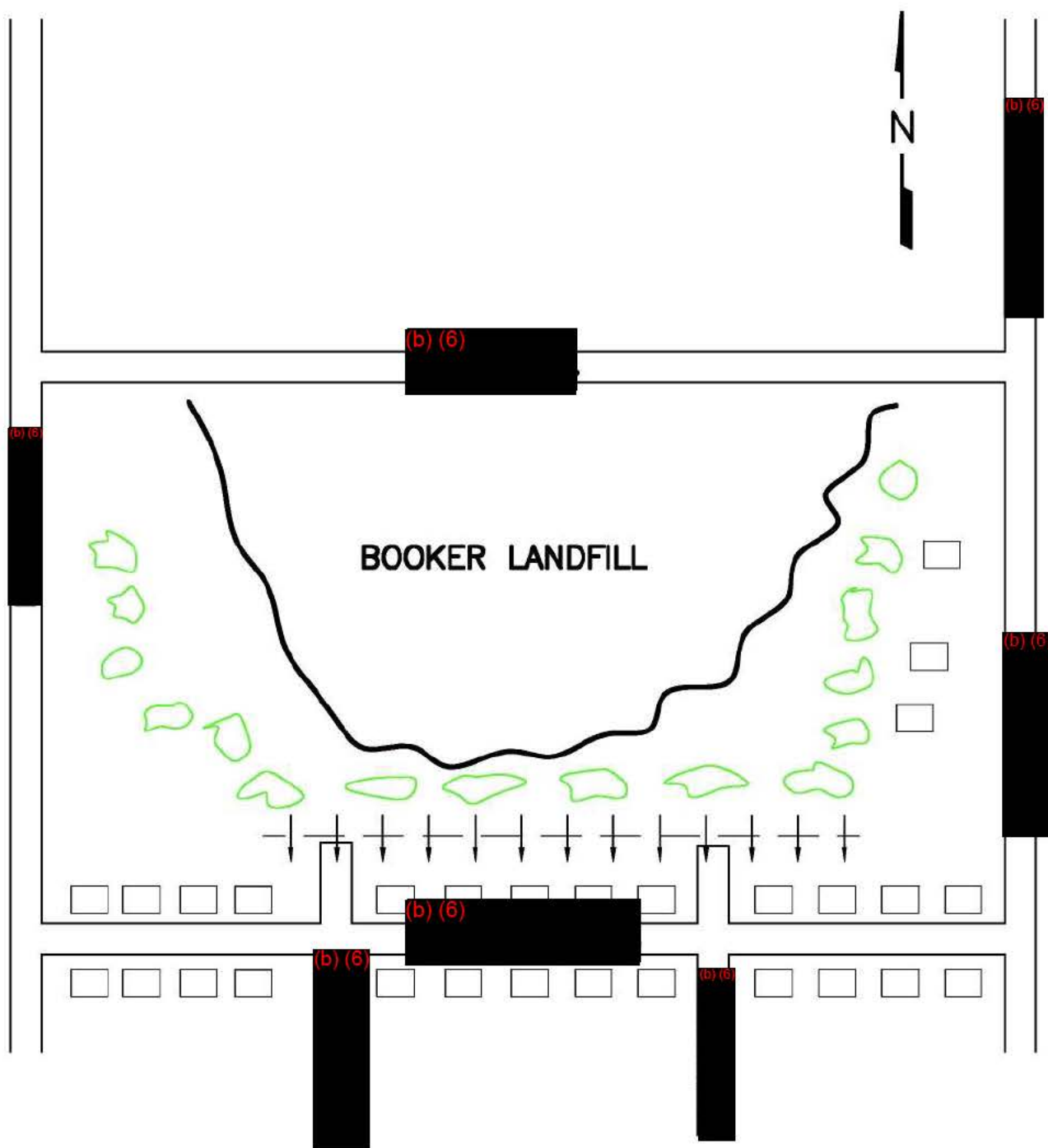


FIGURE 2-2
SITE AREA MAP
BOOKER LANDFILL
Harris County, Texas

Date
OCT 2003

Project No.
12632.001.137.2125

Scale
1" = 500 ft.



LEGEND






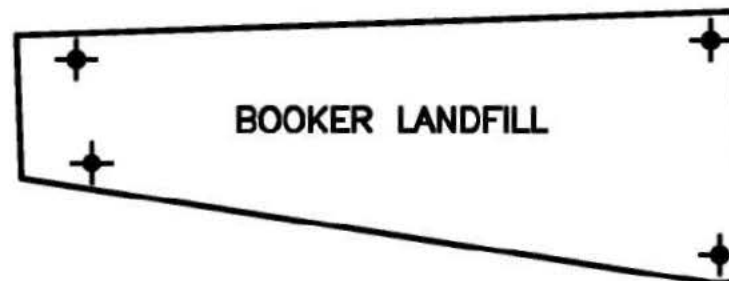
-  RESIDENCES
-  VEGETATION
-  BARREN SOIL
-  DITCH
-  FLOW DIRECTION



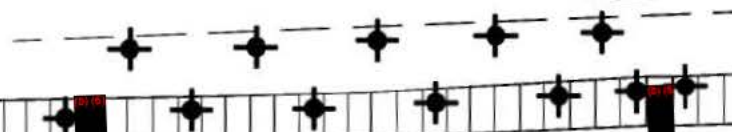
FIGURE 2-3
BOOKER LANDFILL

REGION 6 EPA
HOUSTON HARRIS COUNTY, TEXAS

DATE OCT 03	PROJECT NO. 12632001137	SCALE NOT TO SCALE
----------------	----------------------------	-----------------------



BOOKER LANDFILL



(b) (6)

(b) (6)

SUBDIVISION

LEGEND



SAMPLE LOCATION



DITCH



FIGURE 3-1

**PROPOSED SAMPLE
LOCATION MAP**

REGION 6 EPA
HOUSTON HARRIS COUNTY, TEXAS

DATE OCT 03	PROJECT NO. 12632001137	SCALE 1" = 500'
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Appendix A
Site Access Agreement Letter(s)

Urgent -- Prompt Reply Requested

Re: U.S. Environmental Protection Agency (EPA) request for access to your property, on (b) (6) Houston, Harris County, Texas.

To whom it may concern -

The purpose of this letter is to request permission for the U.S. Environmental Protection Agency (EPA) to enter your property on (b) (6). In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601, EPA is seeking access in order to investigate the nature and extent of contamination that may have resulted from former landfill operations.

Section 104(e) of CERCLA, 42 U.S.C. Section 9604(e), grants EPA the authority to enter a property at reasonable times to investigate such releases. Our policy, however, is to seek voluntary cooperation from the property owner when possible.

Representatives of Weston Solutions, Inc. (WESTON) will be conducting the investigation as EPA's contractor. Personnel from WESTON will be contacting you to verify the exact dates of the visit. If you would like a copy of the resulting inspection report, please mark the appropriate box on the consent form.

Thank you very much for your cooperation in this matter. If you have any questions, please contact me at 214-665-8372.

Sincerely yours,

Bill Rhotenberry
Site Assessment Team Leader
Response & Prevention Branch
EPA Region 6

CONSENT FOR ACCESS TO PROPERTY

CONSENT FOR ACCESS TO PROPERTY

Name of Owner:

Arthur Booker Jr.Address/Description of
Property:1400 Tidwell

I consent to officers, employees, contractors, and authorized representatives of the United States Environmental Protection Agency (EPA) entering and having continued access to my property.

I recognize that these actions by the EPA are undertaken in accordance with its response and enforcement authorities contained in the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9601 *et seq.*

I am the property owner, or a responsible agent of the property owner, and I warrant that I have the authority to enter into this access agreement. This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

Raymond Booker

Date

10-23-03

Signature

Owner

Title

713 772 4186

Phone Number

Reports

Place a check mark in the appropriate space. Please note that if no selection is made, EPA will assume that you do not wish to be provided with the report.

☒ Please provide me with a copy of the Preliminary Assessment report for my property.

☐ I do not wish to receive a copy of the Preliminary Assessment report for my property.

CONSENT FOR ACCESS TO PROPERTY

Name of Owner: _____

Address/Description of Property: _____

FOIA b(6)

I consent to officers, employees, contractors, and authorized representatives of the United States Environmental Protection Agency (EPA) entering and having continued access to my property.

I recognize that these actions by the EPA are undertaken in accordance with its response and enforcement authorities contained in the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9601 *et seq.*

I am the property owner, or a responsible agent of the property owner, and I warrant that I have the authority to enter into this access agreement. This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

10 2 03

FOIA b(6)

Signature

Title

FOIA b(6)

Phone Number

Reports

Place a check mark in the appropriate space. Please note that if no selection is made, EPA will assume that you do not wish to be provided with the report.

- ☒ Please provide me with a copy of the Preliminary Assessment report for my property.
- ☐ I do not wish to receive a copy of the Preliminary Assessment report for my property.

Name of Owner:

FOIA b(6)

Address/Description of Property:

I consent to officers, employees, contractors, and authorized representatives of the United States Environmental Protection Agency (EPA) entering and having continued access to my property.

I recognize that these actions by the EPA are undertaken in accordance with its response and enforcement authorities contained in the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9601 *et seq.*

I am the property owner, or a responsible agent of the property owner, and I warrant that I have the authority to enter into this access agreement. This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

Date

10/24/03

Signature

FOIA b(6)

Title

FOIA b(6)

Phone Number

Reports

Place a check mark in the appropriate space. Please note that if no selection is made, EPA will assume that you do not wish to be provided with the report.

☒ Please provide me with a copy of the Preliminary Assessment report for my property.

☐ I do not wish to receive a copy of the Preliminary Assessment report for my property.

Name of Owner:

FOIA b(6)

Address/Description of Property:

FOIA b(6)

Blue & white brick house.

sent to officers, employees, contractors, and authorized representatives of the United States Environmental Protection Agency (EPA) entering and having continued access to my property.

ognize that these actions by the EPA are undertaken in accordance with its response and cement authorities contained in the Comprehensive Environmental Response, Compensation, Liability Act ("CERCLA"), 42 U.S.C. § 9601 *et seq.*

am the property owner, or a responsible agent of the property owner, and I warrant that I have the rity to enter into this access agreement. This written permission is given by me voluntarily with ledge of my right to refuse and without threats or promises of any kind.

10/23/03

FOIA b(6)

Signature

Title

FOIA b(6)

Phone Number

Reports

a check mark in the appropriate space. Please note that if no selection is made, EPA will ie that you do not wish to be provided with the report.

✓ Please provide me with a copy of the Preliminary Assessment report for my property.

do not wish to receive a copy of the Preliminary Assessment report for my property.

FOIA b(6)

FOIA b(6)

FOIA b(6)

Title

FOIA b(6)

- ☒ Please provide me with a copy of the Preliminary Assessment report for my property.
- ☐ I do not wish to receive a copy of the Preliminary Assessment report for my property.

Name of Owner:

FOIA b(6)

Address/Description of Property:

FOIA b(6)

I consent to officers, employees, contractors, and authorized representatives of the United States Environmental Protection Agency (EPA) entering and having continued access to my property.

I recognize that these actions by the EPA are undertaken in accordance with its response and enforcement authorities contained in the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9601 *et seq.*

I am the property owner, or a responsible agent of the property owner, and I warrant that I have the authority to enter into this access agreement. This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

10.22.03
Date

FOIA b(6)

Signature

FOIA b(6)

Phone Number

Reports

Place a check mark in the appropriate space. Please note that if no selection is made, EPA will assume that you do not wish to be provided with the report.

☒ Please provide me with a copy of the Preliminary Assessment report for my property.

☐ I do not wish to receive a copy of the Preliminary Assessment report for my property.

Name of Owner:

FOIA b(6)

Address/Description of Property:

FOIA b(6)

I consent to officers, employees, contractors, and authorized representatives of the United States Environmental Protection Agency (EPA) entering and having continued access to my property.

I recognize that these actions by the EPA are undertaken in accordance with its response and enforcement authorities contained in the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9601 *et seq.*

I am the property owner, or a responsible agent of the property owner, and I warrant that I have the authority to enter into this access agreement. This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

10-23-03

Date

FOIA b(6)

Signature

Title

FOIA b(6)

Phone Number

Reports

Place a check mark in the appropriate space. Please note that if no selection is made, EPA will assume that you do not wish to be provided with the report.

(x) Please provide me with a copy of the Preliminary Assessment report for my property.

I do not wish to receive a copy of the Preliminary Assessment report for my property

FOIA b(6)

Name of Owner

Address/Description of Property:

FOIA b(6)

I consent to officers, employees, contractors, and authorized representatives of the United States Environmental Protection Agency (EPA) entering and having continued access to my property.

I recognize that these actions by the EPA are undertaken in accordance with its response and enforcement authorities contained in the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9601 *et seq.*

I am the property owner, or a responsible agent of the property owner, and I warrant that I have the authority to enter into this access agreement. This written permission is given by me voluntarily with knowledge of my right to refuse and ~~without threats or promises of any kind.~~

10-22-03

Date

FOIA b(6)

Signature

Home Owner

Title

FOIA b(6)

Phone Number

Reports

Place a check mark in the appropriate space. Please note that if no selection is made, EPA will assume that you do not wish to be provided with the report.

☒ Please provide me with a copy of the Preliminary Assessment report for my property.

I do not wish to receive a copy of the Preliminary Assessment report for my property.

Appendix B
Site-Specific Data Quality Objective

DATA QUALITY OBJECTIVE NO. 1

BOKKER LANDFILL SITE

MEDIA OF CONCERN: SURFACE SOILS

STEP 1. STATE THE PROBLEM	
Soil samples will be collected at various locations at the site and adjacent to the site to determine the concentrations of chemicals of concern and assess whether they are above or below the assessment levels.	
STEP 2. IDENTIFY THE DECISION	
If there are concentrations of chemicals of concern in soil, represented by a sample, above specified assessment levels? Is additional investigation required?	
IDENTIFY THE ALTERNATIVE ACTIONS THAT MAY BE TAKEN BASED ON THE DECISIONS.	<ul style="list-style-type: none">\$ If any contaminant exceeds the specified assessment level in soils, the soil represented by that sample will be considered contaminated and will require additional attention.\$ If no contaminants exceed the specified assessment levels in soils, the soil represented by that sample will not require additional attention.
STEP 3. IDENTIFY INPUTS TO THE DECISION	
IDENTIFY THE INFORMATIONAL INPUTS NEEDED TO RESOLVE A DECISION.	Contaminant concentrations in soil samples collected from surface samples.
IDENTIFY THE SOURCES FOR EACH INFORMATIONAL INPUT AND LIST THE INPUTS THAT ARE OBTAINED THROUGH ENVIRONMENTAL MEASUREMENTS.	<ul style="list-style-type: none">\$ Soil sample locations, Figure 3-1.\$ TCL VOCs, TCL SVOCs, pesticides, PCBs, TAL metals, cyanide and analytical results from soil samples.
BASIS FOR THE CONTAMINANT SPECIFIC ACTION LEVELS.	Three times background for HRS scoring purposes. EPA Region 6 Human Health Medium-Specific Screening Levels or other EPA regional guidance documents also may apply.
IDENTIFY POTENTIAL SAMPLING TECHNIQUES AND APPROPRIATE ANALYTICAL METHODS.	<p>Grab samples will be collected from each sampling location. Soil samples will be analyzed by the following methods:</p> <ul style="list-style-type: none">\$ EPA Method SW8260B for VOCs.\$ EPA Method SW8270C for SVOCs.\$ EPA Method SW8081 for pesticides.\$ EPA Method SW8082 for PCBs.\$ EPA Method SW6010B for total metals.\$ EPA Method SW9010A for cyanide.
STEP 4. DEFINE THE BOUNDARIES OF THE STUDY	
DEFINE THE DOMAIN OR GEOGRAPHIC AREA WITHIN WHICH ALL DECISIONS MUST APPLY.	The boundaries for the site are shown in Figure 3-1.
SPECIFY THE CHARACTERISTICS THAT DEFINE THE POPULATION OF INTEREST.	Contaminant concentrations in the soils.
DEFINE THE SCALE OF DECISION MAKING.	The scale of decision making will be based on the soil represented by each sample collected.

STEP 4. DEFINE THE BOUNDARIES OF THE STUDY	
DETERMINE THE TIME FRAME TO WHICH THE DATA APPLY.	If analytical data from site investigations indicates concentrations above the site action level, additional actions may be required. The analytical data from these investigations will apply until the soil represented by the sample is involved in an additional action.
DETERMINE WHEN TO COLLECT DATA.	Samples will be collected prior to delineating soils requiring additional attention.
IDENTIFY PRACTICAL CONSTRAINTS ON DATA COLLECTION.	<ul style="list-style-type: none"> \$ Inclement weather. \$ Access not attainable. \$ Debris in soils.
STEP 5. DEVELOP A DECISION RULE	
SPECIFY THE PARAMETER THAT CHARACTERIZES THE POPULATION OF INTEREST.	The sample concentrations at each sample location will be compared to three times background for HRS scoring purposes. EPA Region 6 Human Health Medium-Specific Screening Levels or other EPA regional guidance documents also may apply.
SPECIFY THE ACTION LEVEL FOR THE DECISION.	The EPA Region 6 Human Health Medium-Specific Screening Levels or other EPA regional guidance documents.
DEVELOP A DECISION RULE.	If any result in a soil sample is above the contaminant specific action level, then the soil represented by that sample may require additional investigation, otherwise the soil does not require additional investigation.
STEP 6. SPECIFY LIMITS ON DECISION ERRORS	
DETERMINE THE POSSIBLE RANGE OF THE PARAMETER OF INTEREST.	Contaminant concentrations may range from 0 mg/kg to more than the contaminant specific action level.
DEFINE BOTH TYPES OF DECISION ERRORS AND IDENTIFY THE POTENTIAL CONSEQUENCES OF EACH.	<p><u>Type I Error:</u> Deciding that the specified area represented by the soil sample does not exceed the specified assessment level when, in truth, the soil concentration of the contaminant exceeds its specified assessment level. The consequence of this decision error is that contaminated soil will remain on-site, possibly endangering human health and the environment. There may also be potential future liability associated with cleanup costs of leaving contaminated soil on-site. This decision error is more severe.</p> <p><u>Type II Error:</u> Deciding that the specified area represented by the soil sample does exceed the specified assessment level when, in truth, it does not. The consequences of this decision are that remediation of the specified area will continue and unnecessary costs will be incurred.</p>

DATA QUALITY OBJECTIVE NO. 1**BOOKER LANDFILL SITE****MEDIA OF CONCERN: SURFACE SOILS (Continued)**

STEP 6. SPECIFY LIMITS ON DECISION ERRORS	
ESTABLISH THE TRUE STATE OF NATURE FOR EACH DECISION RULE.	<p>The true state of nature when the soil is decided to be below the specified assessment levels when in fact, it is not below the specified assessment levels, is that the area does need remedial action.</p> <p>The true state of nature when the soil is decided to be above the specified assessment levels when in fact, it is not above the specified assessment levels, is that the area does not need remedial action.</p>
DEFINE THE TRUE STATE OF NATURE FOR THE MORE SEVERE DECISION ERROR AS THE BASELINE CONDITION OR THE NULL HYPOTHESIS (H_0) AND DEFINE THE TRUE STATE FOR THE LESS SEVERE DECISION ERROR AS THE ALTERNATIVE HYPOTHESIS (H_a).	<p>H_0: The soil represented by the soil sample of the specified area is above the specified assessment level.</p> <p>H_a: The soil represented by the soil sample of the specified area is below the specified assessment level.</p>
ASSIGN THE TERMS FALSE POSITIVE AND FALSE NEGATIVE TO THE PROPER DECISION ERRORS.	<p>\$ False Positive Error = Type I</p> <p>\$ False Negative Error = Type II</p>
ASSIGN PROBABILITY VALUES TO POINTS ABOVE AND BELOW THE ACTION LEVEL THAT REFLECT THE ACCEPTABLE PROBABILITY FOR THE OCCURRENCES OF DECISION ERRORS.	The assignment of probability values is not applicable to these DQOs because a nonprobabilistic (judgement-based) process has been specified.
STEP 7. OPTIMIZE THE DESIGN	
REVIEW THE DQOs.	Due to insufficient historical data, determination of the standard deviation was not possible. Therefore, sample size calculation using the traditional statistical formula may not be the optimal design. In order to select the optimal sampling program that satisfies the DQOs and is the most resource effective, other elements were considered.
<p>DEVELOP GENERAL SAMPLING AND ANALYSIS DESIGN.</p> <p>The sampling and analysis design is as follows:</p> <ul style="list-style-type: none">\$ Surface soil samples will be collected at 4 on-site locations, 12 off-site locations and 3 background locations. In addition, one duplicate sample will be collected.\$ The samples will be collected on locations to characterize potential waste sources and evaluate soil exposure.\$ The samples will be collected for VOCs, SVOCs, PCBs, pesticides, metals and cyanide analysis.\$ The samples will be collected with scoops.	

Appendix C
Standard Operating Procedures

SOP	1001.01				
GROUP	Sampling Procedures				
SUB-GROUP	Soil Sampling Procedures				
TITLE	Surface Soil Sampling				
DATE	9/25/2002	FILE	1001-01.DOC	PAGE	1 of 3

INTRODUCTION

The following Standard Operating Procedure (SOP) is to describe the procedures for collecting representative soil samples. Analysis of soil samples may determine whether concentrations of specific soil pollutants exceed established action levels, or if the concentrations of soil pollutants present a risk to public health, welfare, or the environment. This SOP is similar to SOP Number 1001.03 for collecting near surface soil samples with a hand auger.

PROCEDURE

Surface soil samples may be collected using a variety of methods and equipment. The methods and equipment used are dependent on the depth of the desired sample, the type of sample required (disturbed versus undisturbed), and the type of soil. Near-surface soils may be easily sampled using a spade, trowel, or hand scoop.

Sample Preservation

Cooling to $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$, supplemented by a minimal holding time, is suggested.

Interferences and Potential Problems

There are two primary interferences or potential problems associated with soil sampling: cross-contamination of samples and improper sample collection. Cross-contamination problems can be eliminated or minimized through the use of dedicated (disposable) sampling equipment. If this is not possible or practical, then decontamination of sampling equipment is necessary. Improper sample collection can involve using contaminated equipment, disturbance of the matrix resulting in compaction of the sample, or inadequate homogenization of the samples where required, resulting in variable, non-representative results. Homogenization may also affect sample representativeness where the analytical requirements include volatile organic compounds.

Equipment or Apparatus

The equipment used for sampling may be selected from the following list, as appropriate:

- Tape measure
- Survey stakes or flags
- Stainless steel, plastic, or other appropriate homogenization bucket or bowl
- Ziploc plastic bags
- Logbook
- Labels
- Chain-of-custody forms and seals
- Coolers
- Ice
- Decontamination supplies and equipment
- Canvas or plastic sheet
- Spatulas/spades/shovels
- Scoops

SOP	1001.01				
GROUP	Sampling Procedures				
SUB-GROUP	Soil Sampling Procedures				
TITLE	Surface Soil Sampling				
DATE	9/25/2002	FILE	1001-01.DOC	PAGE	2 of 3

- Plastic or stainless steel spoons
- Trowel

Preparation

1. Determine the extent of the sampling effort, the sampling methods to be employed, and what equipment and supplies are required.
2. Obtain necessary sampling and monitoring equipment from the list above.
3. Prepare schedules, and coordinate with staff, client, and regulatory agencies, if appropriate.
4. Perform a general site survey prior to site entry in accordance with the site-specific health and safety plan.
5. Decontaminate or preclean equipment, and ensure that it is in working order.
6. Use stakes, buoys, or flagging to identify and mark all sampling locations. Consider specific site factors, including extent and nature of contaminant, when selecting sample locations. If required, the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions. All staked locations will be utility-cleared by the property owner or other responsible party prior to soil sampling.
7. Evaluate safety concerns associated with sampling that may require use of personal protective equipment and/or air monitoring.

Surface Soil Sample Collection

Collect samples from the near-surface soil with tools such as spades, shovels, and scoops. Surface material can be removed to the required depth with this equipment, then a stainless steel or plastic scoop can be used to collect the sample. The use of a flat, pointed mason trowel to cut a block of the desired soil can be helpful when undisturbed profiles are required. A stainless steel scoop, lab spoon, or plastic spoon will suffice in most other applications. Avoid the use of devices plated with chrome or other target analyte materials.

The following procedures should be followed when collecting surface soil samples:

1. Carefully remove the top layer of soil or debris to the desired sample depth with a pre-cleaned spade.
2. Using a pre-cleaned, stainless steel scoop, plastic spoon, or trowel, remove and discard a thin layer of soil from the area which came in contact with the spade.
3. If volatile organic analysis is to be performed, transfer a portion of the sample directly into an appropriate, labeled sample container(s) with a stainless steel lab spoon, plastic lab spoon, or equivalent and secure the cap(s) tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into an appropriate, labeled container(s) and secure the cap(s) tightly; or if composite samples are to be collected, place a sample from another sampling interval into the

SOP	1001.01				
GROUP	Sampling Procedures				
SUB-GROUP	Soil Sampling Procedures				
TITLE	Surface Soil Sampling				
DATE	9/25/2002	FILE	1001-01.DOC	PAGE	3 of 3

homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled container(s) and secure the cap(s) tightly.

4. Fill hole created through sampling with unused material or other appropriate backfill material (sand).
5. Record applicable information into field log book or appropriate forms as documentation of sampling.

SOP	1101.01				
GROUP	Sampling Handling				
SUB-GROUP	Sample Custody				
TITLE	Sample Custody in the Field				
DATE	10/2/2002	FILE	1101-01.DOC	PAGE	1 of 4

INTRODUCTION

The following Standard Operating Procedure (SOP) presents procedures for maintaining sample chain of custody (COC) during activities where samples are collected.

PROCEDURE

Sample custody is defined as being under a person's custody if any of the following conditions exist:

- it is in their possession,
- it is in their view, after being in their possession,
- it was in their possession and they locked it up, or
- it is in a designated secure area.

A designated field sampler will be personally responsible for the care and custody of collected samples until they are transferred to another person or properly dispatched to the laboratory. To the extent practicable, as few people as possible will handle the samples.

Sample tags or labels will be completed and applied to the container of each sample. When the tags or labels are being completed, waterproof ink will be used. If waterproof ink is not used, the tags or labels will be covered by transparent waterproof tape. Sample containers may also be placed in Ziploc-type storage bags to help keep them clean in the cooler. Information typically included on the sample tags or labels will include the following:

- Project Code
- Station Number and Location
- Sample Identification Number
- Date and Time of Sample Collection
- Type of Laboratory Analysis Required
- Preservation Required, if applicable
- Collector's Signature
- Priority (optional)
- Other Remarks

Additional information may include:

- Anticipated Range of Results (Low, Medium, or High)
- Sample Analysis Priority

SOP	1101.01				
GROUP	Sampling Handling				
SUB-GROUP	Sample Custody				
TITLE	Sample Custody in the Field				
DATE	10/2/2002	FILE	1101-01.DOC	PAGE	2 of 4

A COC form will be completed each time a sample or group of samples is prepared for transfer to the laboratory. The form will repeat the information on each of the sample labels and will serve as documentation of handling during shipment. The minimum information requirements of the COC form are listed in Table 1101.01-A. An example COC form is shown in Figure 1101.01-A. The completed COC must be reviewed by the Field Team Leader or Site Manager prior to sample shipment. The COC form will remain each sample shipping container at all times, and another copy will be retained by the member of the sampling team who originally relinquished the samples or in a project file.

SOP	1101.01				
GROUP	Sampling Handling				
SUB-GROUP	Sample Custody				
TITLE	Sample Custody in the Field				
DATE	10/2/2002	FILE	1101-01.DOC	PAGE	3 of 4

TABLE 1101.01-A CHAIN OF CUSTODY FORM

INFORMATION	COMPLETED BY	DESCRIPTION
COC	Laboratory	enter a unique number for each chain of custody form
SHIP TO	Field Team	enter the laboratory name and address
CARRIER	Field Team	enter the name of the transporter (e.g., FedEx) or handcarried
AIRBILL	Field Team	enter the airbill number or transporter tracking number (if applicable)
PROJECT NAME	Field Team	enter the project name
SAMPLER NAME	Field Team	enter the name of the person collecting the samples
SAMPLER SIGNATURE	Field Team	signature of the person collecting the samples
SEND RESULTS TO	Field Team	enter the name and address of the prime contractor
FIELD SAMPLE ID	Field Team	enter the unique identifying number given to the field sample (includes MS, MSD, field duplicate and field blanks)
DATE	Field Team	enter the year and date the sample was collected in the format M/D (e.g., 6/3)
TIME	Field Team	enter the time the sample was collected in 24 hour format (e.g., 0900)
MATRIX	Field Team	enter the sample matrix (e.g., water, soil)
PRESERVATIVE	Field Team	enter the preservative used (e.g., HNO3) or "none"
FILTERED/ UNFILTERED	Field Team	enter "F" if the sample was filtered or "U" if the sample was not filtered
CONTAINERS	Field Team	enter the number of containers associated with the sample
MS/MSD	Field Team or Laboratory	enter "X" if the sample is designated for the MS/MSD
ANALYSES REQUESTED	Field Team	enter the method name of the analysis requested (e.g., SW6010A)
COMMENTS	Field Team	enter comments
SAMPLE CONDITION UPON RECEIPT AT LABORATORY	Laboratory	enter any problems with the condition of any sample(s)
COOLER TEMPERATURE	Laboratory	enter the internal temperature of the cooler, in degrees C, upon opening
SPECIAL INSTRUCTIONS/COMMENTS	Laboratory	enter any special instructions or comments
RELEASED BY (SIG)	Field Team and Laboratory	enter the signature of the person releasing custody of the samples
COMPANY NAME	Field Team and Laboratory	enter the company name employing the person releasing/receiving custody
RECEIVED BY (SIG)	Field Team and Laboratory	enter the signature of the person receiving custody of the samples
DATE	Field Team and Laboratory	enter the date in the format M/D/YY (e.g., 6/3/96) when the samples were released/received
TIME	Field Team and Laboratory	enter the date in 24 hour format (e.g., 0900) when the samples were released/received

SOP	1101.01				
GROUP	Sampling Handling				
SUB-GROUP	Sample Custody				
TITLE	Sample Custody in the Field				
DATE	10/2/2002	FILE	1101-01.DOC	PAGE	4 of 4

FIGURE 1101.01-A CHAIN OF CUSTODY FORM

SOP	1501.01				
GROUP	Field Documentation				
SUB-GROUP					
TITLE	Field Logbook				
DATE	10/2/2002	FILE	1501-01.DOC	PAGE	1 of 3

INTRODUCTION

The following Standard Operating Procedure (SOP) presents the procedures for documenting activities observed or completed in the field in a field logbook. The documentation should represent all activities of WESTON personnel and entities under WESTON's supervision.

TERMS

FSP - Field Sampling Plan

SAP - Sampling and Analysis Plan

QAPP - Quality Assurance Project Plan

HASP - Health and Safety Plan

PROCEDURE

Field logbooks will be used and maintained during field activities to document pertinent information observed or completed by WESTON personnel or entities that WESTON is responsible for providing oversight. Field logbooks are legal documents that form the basis for later written reports and may serve as evidence in legal proceedings. The Site Manager or Field Team Leader will review field log entries daily and initial each page of entries. Field logbooks will be maintained by the Site Manager or Field Team Leader during field activities and transferred to the project files for a record of activities at the conclusion of the project. General logbook entry procedures are listed below.

- Logbooks must be permanently bound with all pages numbered to the end of the book. Entries should begin on page 1.
- Only use blue or black ink (waterproof) for logbook entries.
- Sign entries at the end of the day, or before someone else writes in the logbook.
- If a complete page is not used, draw a line diagonally across the blank portion of the page and initial and date the bottom line.
- If a line on the page is not completely filled, draw a horizontal line through the blank portion.
- Ensure that the logbook clearly shows the sequence of the day's events.
- Do not write in the margins or between written lines, and do not leave blank pages to fill in later.
- If an error is made, make corrections by drawing a single line through the error and initialing it.

SOP	1501.01				
GROUP	Field Documentation				
SUB-GROUP					
TITLE	Field Logbook				
DATE	10/2/2002	FILE	1501-01.DOC	PAGE	2 of 3

- Maintain control of the logbook and keep in a secure location.

Field logbooks will contain, at a minimum, the following information, if applicable:

General Information

- Name, location of site, and work order number
- Name of the Site Manager or Field Team Leader
- Names and responsibilities of all field team members using the logbook (or involved with activities for which entries are being made)
- Weather conditions
- Field observations
- Names of any site visitors including entities that they represent

Sample Collection Activities

- Date(s) and times of the sample collection or event.
- Number and types of collected samples.
- Sample location with an emphasis on any changes to documentation in governing documents (i.e., SAP, FSP). This may include measurements from reference points or sketches of sample locations with respect to local features.
- Sample identification numbers, including any applicable cross-references to split samples or samples collected by another entity.
- A description of sampling methodology, or reference to any governing document (i.e., FSP, SAP, QAPP).
- Summary of equipment preparation and decontamination procedures.
- Sample description including depth, color, texture, moisture content, and evidence of waste material or staining.
- Air monitoring (field screening) results.
- Types of laboratory analyses requested.

Site Health and Safety Activities

SOP	1501.01				
GROUP	Field Documentation				
SUB-GROUP					
TITLE	Field Logbook				
DATE	10/2/2002	FILE	1501-01.DOC	PAGE	3 of 3

- All safety, accident, and/or incident reports.
- Real-time personnel air monitoring results, if applicable, or if not documented in the HASP.
- Heat/cold stress monitoring data, if applicable.
- Reasons for upgrades or downgrades in personal protective equipment.
- Health and safety inspections, checklists (drilling safety guide), meetings/briefings.
- Calibration records for field instruments.

Oversight Activities

- Progress and activities performed by contractors including operating times.
- Deviations of contractor activities with respect to project governing documents (i.e., specifications).
- Contractor sampling results and disposition of contingent soil materials/stockpiles.
- Excavation specifications and locations of contractor confirmation samples.
- General site housekeeping and safety issues by site contractors.

SOP	1502.01				
GROUP	Field Documentation				
SUB-GROUP					
TITLE	Photograph Logs				
DATE	10/2/2002	FILE	1502-01.DOC	PAGE	1 of 1

INTRODUCTION

The following Standard Operating Procedure (SOP) presents the requirements for collecting information related to photodocumentation of site activities.

PROCEDURE

- Uniquely number each roll of film obtained for use.
- Record the following information for each negative exposed:
 1. Date and Time
 2. Photographer Name
 3. Witness Name
 4. Orientation (Landscape, Portrait, or Panaoramic)
 5. Description (including activity being performed, specific equipment of interest, sample location(s), compass direction photographer is facing)
- Record "NA" for the negatives not used if the roll is not completely used prior to development.
- Record unique roll number on receipt when film is submitted for development.
- Verify descriptions on log with negative numbers when photographs are received from processing.

FORMS

Blank Photograph Logs can be printed from WESTON On-Line from the *Records Management Application*. Selecting the *Reports/Project Planning/Blank Photo Logs* menu option will generate a project specific log with 36 entries.

SOP	1502.02				
GROUP	Field Documentation				
SUB-GROUP					
TITLE	Photograph Management and Reporting				
DATE	10/2/2002	FILE	1502 02.DOC	PAGE	1 of 1

INTRODUCTION

The following Standard Operating Procedure (SOP) presents the requirements for managing and reporting information related to photodocumentation of site activities.

PROCEDURE

Enter the Photograph Log information specified in SOP 1502.01 into WESTON On-Line *Records Management Application*. The data entry screen can be accessed by selecting the *Data/Photograph Log* menu option.

REPORTS

Complete Photograph Logs can be printed from WESTON On-Line from the *Records Management Application*. Selecting the *Reports/Summary Tables/Photographs/Logs* menu option will generate a specific log for a selected roll of film.

Photograph Templates can be printed from WESTON On-Line from the *Records Management Application*. Selecting the *Reports/Summary Tables/Photographs/Templates* menu option will generate templates for mounting the photographs for a selected roll of film.

Appendix B

Preliminary Assessment / Site Inspection Logbook

"*Rite in the Rain*"
ALL-WEATHER WRITING PAPER



HORIZONTAL LINE

All-Weather Notebook
No. 391

Booker Landfill PA/S1
06-03-09-0004
10/2/03 - 11/5/03

4 5/8" x 7" - 48 Numbered Pages

10/2/03 0603-09-0004
10/5 AR M. Brown
Berry arrived on site
at 10:15 (b)(6) 10:15 +
10:15 on south side
former Booker landfill
Meet with John Everett
and Linda Capp & Co-Houston
Chron. & Lat 29 84 364 N,
095 43 362 W
1000 TCEQ Representative
Andy Vance arrived on site
1009 City of Houston Rep.
Chuck Kooser + arrived on
site

all late entry - above lat.,
lon. from north-east corner
of former landfill. Site
safety, sunny, breezy,
approx. 72°F. Beware of
slip, trip, falls, bio. hazards,
insects.

1015 Original entry to
landfill at north-east
corner, where lat., lon.
taken. Part of (b)(6)
Michael Brown

10/2/03 0603-09-0004
on former landfill
depth of samples unknown
3 ft sandy clay material
2 ft on nodules. Nature
of any metal in area unknown,
is soil fill material unknown
was begin walking site sta
walking south, to back of
residences off (b)(6)
landfill area approx 30 acres
1057 on point of landfill
29 84 464 N 095 43 756 W previous
logs taken at near SW
corner so in found about ft
down here.

1105 Arrive at (b)(6) + (b)(6)
(b)(6) Red staining apparent
1115 SW corner of site (approx.)
29.84537°N, 095.43782°W

1120 SW corner built-up with
soil, approx. 15 ft up from
drainage ditch. Only exposed
waste in ditch, none on
open land off (b)(6)

1150 Arrive back at cars at NE
Michael Brown

0/2/03

06-03-09-0004

corner of site.

150 Drainage appears to be toward (b) (6) from site, away from berm, which is on north side of ditch. There are a few water wells in area, used for livestock, none used for drinking. All residences on city water

1200 Leave site for lunch

Personnel from Houston Chronicle & TCEQ depart.

1250 Leave lunch

1315 Arrive at (b) (6)

library to look over files city has on site

330 City performed water well sampling in 1992, with no results above regulatory limits. Address of landfill is 1401 W. Tidwell. Landfill doesn't go all the way to (b) (6), ends before street.

1400 Leave library, Chuck

Michelle Brown

10/2/03

06-03-09-0004

5

with City of Houston departs
1430 START + EPA return to site.

SE corner of site 29.84406°N
095.43333°W. drainage ditch doesn't go all the way to (b) (6). Landfill boundaries appear to be between (b) (6) + (b) (6)

SW corner of 29.84549°N,
095.43867°W. NW corner of
29.84639°N, 095.43884°W

1455 Late entry, START + EPA set boundaries of site

1500 Get GPS reading from (b) (6) + (b) (6)
29.84446°N
095.43762°W. Get reading at (b) (6) + (b) (6)

29.84428°N, 095.43322°W

1510 Meet owner at FOIA b(6)

FOIA b(6)

at corner of (b) (6) + (b) (6)
Signs site access agreement. Says brother next door died of prostate cancer in May. He was 77 years old + had lived
Michelle Brown

10/2/03 04-03-09-0004
in the neighborhood for more
than 30 years. Says rotten-
egg odor used to occur
regularly after rain ~~tho~~ but
that they hadn't had problems
for awhile - since the berm
had been built - up higher -
1530 START M. Brown, &
EPA B. Rhotenberry depart
Site.

Michael Brown

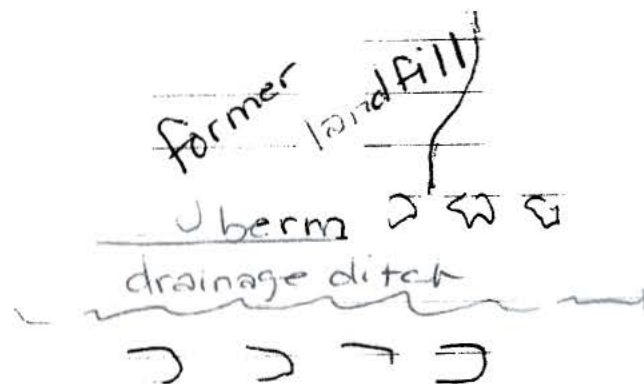
Michael Brown

10/2/03

Site Sketch

↑ N

(b) (6)



(b) (6)

Michael S. 10/2/03

10/2/03

D

- 1 S 10³⁰ back of house butting up to S. land fill MB
- 2 E 10⁴⁵ drainage ditch behind renovation properties, btwn. land fill + residences MB
- 3 N 11⁰⁰ lowpoint at SW corner MB
- 4 NE 11⁰⁵ red staining on (b) (6) + by drainage ditch MB
- 5 NE 11⁴⁰ NW corner of site MB
- 6 S 12⁰⁰ S end of site, slight berm MB
- 7 NW 14⁴⁰ from SE corner of land fill to NW MB

Michael S.

10/27/03

06-03-09-0004

1100 START-2 M. Brown arrives on-site at 1400. Tidwell, Houston, Texas, former Booker Landfill. Meet with Chuck Roosevelt with City of Houston.

1110 EPA Bill Rhotenberry arrives on-site. Informs START that Congresswoman, press and EPA Regional director have cancelled press meeting that had been scheduled for 1430 in the afternoon. Terrain very muddy due to rains over the weekend. Decide to set-up at (b) (6)

on (b) (6) for sampling. 1130 START-2 Tom Walzer arrives on-site.

1150 START-2 Angela Restivo and Joe McShane arrive at (b) (6) and (b) (6).

Discuss day's activities. Will sample residents' back-yard's first starting at FOIA b(6) and moving towards FOIA b(6) block. *Michael Brown*

11

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06-03-09-0004

1210 Break for lunch

During lunch break STARTS M. Brown, A. Restivo + J. McShane Pick-up printer, paper and camera from WESTON warehouse and purchase 2 stainless steel trowels and shop towels for dry decom.

1350 Arrive on-site at (b) (6) and (b) (6). EPA B. Rhotenberry, City of Houston C. Roosevelt + TCEQ Andy Vonne + START T. Walzer on-site. EPA, TCEQ + City of Houston meet with residents of neighborhood.

1415 Take grab soil sample at (b) (6). Using Trimble Geo XT # 4230B12186 for coordinates. A. Restivo takes sample. This sample designated as MS/MSD.

1455 Take grab soil sample from FOIA b(6) along fence line. Sampled by A. *Michael Brown*

10/27/03

06-03-09-0004

Restivo

1720 Arrive at [redacted] site

sample.

530 Sample [redacted]

FOIA b(6)

Sampled by A. Restivo

1545 Arrive at [redacted]

FOIA b(6)

and begin sampling. A. Restivo takes sample

1610 Arrive at [redacted]

FOIA b(6)

and A. Restivo takes grab sample at NE corner of backyard

1630 Complete sampling for day and work on completing the CLP paperwork. Sample numbers are as follows:

(b) (6)

(b) (6)

(b) (6)

FOIA b(6)

(b) (6)

(b) (6)

(b) (6)

(b) (6)

MIFOPJW

FOIA b(6)

(b) (6)

(b) (6)

FOIA b(6)

(b) (6)

(b) (6)

Michelle Smith

10/27/03

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1720 EPA Bill Rhotenberry departs site

1730 START J. Mashano departs site

1800 STARTS T. Walzer, A. Restivo and M. Brown tag complete CLP paperwork & depart site. 1820 T. Walzer heads to FedEx to ship samples taken for day.

Michelle Smith

12/28/03

06-03-09-0004

0800 START-2 M. Brown, A. Restivo, J. Mashane, T. Walzer arrive on-site.

0810 Discuss day's activities. Two residents left to sample then begin on ditch north of W. Donovan.

0811 Late entry. Yesterday 10/27/03 at 1150 have site safety meeting and sign HASP. Discuss slip, trip, fall, check with residents before entering backyards, make sure no dogs are present. Mosquitoes bad. Weather - partly cloudy low 50s to upper 60s.

0815 Conduct daily site safety meeting. Weather mid 50s to upper 70s. Slip, trip, fall. Check with remaining residents before sampling to ensure no dogs in backyard. Begin sampling ditch, beware of uneven terrain, poison ivy, mosquitoes, snakes.

Michelle Gran

10/28/03

06-03-09-0004

15

0830 EPA B. Rhotenberry arrives on-site. Walk to [FOIA b(6)]

to talk to residents and enter backyard for sampling.

0850 Dave Jones with Quatern arrives on-site to observe.

0851 Late entry. Benny with Quatern observes sampling activities from previous day (10/27/03). Quatern is the company that did original sampling event in spring 2003.

0855 Attempt to get residents at [FOIA b(6)]. No answer. Large dog in backyard, although have access agreement, decide not to attempt entry into backyard. Go to [FOIA b(6)].

0900 Arrive at [FOIA b(6)]. Residents at home.

0905 J. Mashane begins taking grab sample at [FOIA b(6)].

0925 Get access to backyard at [FOIA b(6)].

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0930 J. Mashane begins taking grab sample from [FOIA b(6)]

0950 Begin taking br's ditch samples to the north of [FOIA b(6)]

0955 J. Mashane begins taking ditch sample #1 just northw of [FOIA b(6)] intersection

1015 NW of [FOIA b(6)] begin taking ditch sample #2. Sampled by A. Restivo.

1030 J. Mashane begins taking ditch sample #3 just north of [FOIA b(6)] Due

to heavy vegetation, we are having difficulty getting a good fix on GPS coordinates with ditch samples #2 and #3.

1040 Begin taking ditch sample #4 between [FOIA b(6)]

1055 Begin taking ditch sample #5 just N of [FOIA b(6)] and [FOIA b(6)] intersection

Michael Brown

10/28/03

06-03-09-0004

1100 Late entry while in ditch [FOIA b(6)] had been following us to observe sampling. She fell twice due to the rough terrain. Once after ditch sample #12 and again after ditch sample #23. TCEQ representative Andy Vance escorts her back to her house on [FOIA b(6)] She appears tired but not injured.

1120 Help T. Walzer with CLP paperwork. Numbers as follows:

• Ditch sample #5 - [FOIA b(6)]

- [FOIA b(6)]

• Ditch sample #2 - [FOIA b(6)]

- [FOIA b(6)]

• Ditch sample #3 - [FOIA b(6)]

- [FOIA b(6)]

• [FOIA b(6)] [FOIA b(6)]

- [FOIA b(6)]

• [FOIA b(6)] [FOIA b(6)]

- [FOIA b(6)]

• Ditch sample #5 [FOIA b(6)]

- [FOIA b(6)]

Michael Brown

10/28/03

Ditch sample #4 -

(b) (6)

(b) (6)

Ditch sample #1 -

(b) (6)

(b) (6)

200 Complete CLP paperwork from this morning's samples
City of Houston C. Roosevelt + arrives on-site

1205 Break for lunch

1330 Arrive on-site, off

(b) (6)

to begin source sampling on what was the former Booker Landfill.

1355 A. Restivo begins taking source sample #1 near SE corner of Booker Landfill.

FOIA b(6)

+ J. Meschane begin sampling source #2 west of source #1

1440 Duplicate sample taken at source #2 location. Melanie Church arrives on-site to perform a health and safety audit.

Michelle Green

10/28/03

06-03-09-0004

1450 A. Restivo + J. Meschane begin taking source sample #3 west of source #2

1500 A. Restivo begins taking source sample #4 at the SW corner of the former Booker Landfill

1600 A. Restivo takes background sample #1 just south of

(b) (6)

adjacent to ditch.

1605 A. Restivo takes background sample #2 just south of

(b) (6)

adjacent to drainage ditch

1615 A. Restivo takes background sample #3 off

(b) (6)

just south of

(b) (6)

1630 Return to cargo van at

(b) (6)

and

(b) (6)

and

work on completing CLP paperwork

1635 CLP paper work + sample numbers are as follows:

• Source sample #2

Duplicate

(b) (6)

- MFOPL 2

mean from

10/28/03

Source sample #2 - Dop -

(b) (6)

Source sample #3 -

(b) (6)

Source sample #4 -

(b) (6)

1645 Rinse sample taken
off trowel and T-bar used.

1646 CLP paperwork continued.

Source sample #1 -

FOPKO mg

(b) (6)

Background #1 -

(b) (6)

Background #2 -

(b) (6)

Background #3 -

(b) (6)

Rinse blank -

(b) (6)

1745 Complete CLP paperwork
and begin packing up for day.

1815 Depart site. T. Wolter
takes daily samples to FedEx
to be sent to the laboratories.

Michael Brown

06-03-07-0004
(b) (6)

10/28/03

Sampling completed for
Booker Landfill PA/SI.

06-03-09-0004

11/03/03

06-03-09-0004

9.30 - Late entry. A multiRAE gas monitor was used to conduct air monitoring for volatile compounds off

(b) (6)

and on the Booker Landfill site, on the 27th and 28th of October.

No readings were above background. Background was taken within a rented van outside of the WESTON warehouse.

Michelle Jones

Michelle Jones

Sony Digital Mavica RFW20445²⁵

10/27/03 Photolog 06-03-09-0004

No	Dirac	Time	Desc.	P/W
1	NE	1417	grab sample at	MB/AR

FOIA b(6)

2	NE	1455	grab sample at	MB/AR
---	----	------	----------------	-------

FOIA b(6)

3	N	1515		
---	---	------	--	--

FOIA b(6)

4	NE	1530		
---	----	------	--	--

grab sample

5	N			
---	---	--	--	--

FOIA b(6)

6	NE			
---	----	--	--	--

Grab sample

7	N			
---	---	--	--	--

FOIA b(6)

8	NE	1415		
---	----	------	--	--

FOIA b(6)

grab sample

9	N	1620		
---	---	------	--	--

FOIA b(6)

10	N	163		
----	---	-----	--	--

11/2/03
Photolog

M. H. S.

CPW 204

10/28/03

10 9 23 59 00 00

No. 100 me Desc 11 11

N 900

FOIA b(6)

2 N 0915

3 NE 0930 Grab sample at MB/JM

N 935

FOIA b(6)

5 NE 0955 Grab sample MB/JM
ditch #1

6 SE 1000 Grab sample MB/AR
ditch #2

7 N 0355 Grab sample MB/AR
ditch #3

18 SW 1045 Grab sample MB/AR
ditch #4

19 NW 1000 Grab sample MB/AR
ditch #5

20 W 1357 Grab sample MB/AR
source #1

2 E 420 Grab sample MB/AR
source #2

12 E 452 Grab sample MB/AR
source #3

23 SE 1502 Grab sample MB/AR
source #4

5 4 Dig. M 1 2 RIL 0945

10/28/03 Photo 3 0 3 59 00

No. 100 me Desc 2 100

24 S 1000 Background sample MB/AR

#1

25 E 1000 Background sample
#2 MB/AR

26 N 1020 Background sample
#3 MB/AR

27 W 1045 R site sample
being taken MB/AR

M

New Center

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Attachment C

**Preliminary Assessment / Site Inspection Photo Log
(See folder labeled Photographs)**















































Appendix D

National Priorities List Characteristics Form and Hazard Ranking System SUPERScreen Documentation Record

**NPL Characteristics
Data Collection Form**
(Version 3.0, December 2001)

Site Name: Booker Landfill

Region: 6 State: TX

This form should be completed for all sites being proposed for addition to the NPL and included as part of the complete HRS package submitted to EPA Headquarters.

**Office of Emergency and Remedial Response
U.S. Environmental Protection Agency**

NPL Characteristics Data Collection Form

General Instructions

The NPL Characteristics Data Collection Form is designed to standardize the site information collected for input into the Superfund NPL Assessment Program (SNAP) Database. This database serves as a repository for general information about NPL sites and is used to respond to queries about NPL sites from a variety of sources including the general public, the press, other government agencies, and members of Congress. The primary source materials for completing this form are Regional site file documents (e.g., Preliminary Assessment (PA) and Site Investigation (SI) reports), along with the site's Hazard Ranking System scoring package. Although much of the information needed to complete the form is expected to be available in the HRS scoring package, other sources in a site file may need to be consulted for some questions. If definitive data are not available in the site file to answer a question, estimates based on best professional judgment and other sources of information are acceptable.

As you complete the NPL Characteristics Data Collection Form, keep the following points in mind.

- ▶ Use the most current information available (e.g., SI-level information has priority over PA-level information).
- ▶ Try to use the listed response options when answering a question, and use “unknown” and “other” responses *only* when absolutely necessary. If, however, the available response options for a question are not adequate to accurately describe the site, use the “other” response and provide a brief explanation in the space provided.
- ▶ Use the margins to explain responses that do not match listed response options or to provide clarifying information. If you need additional room to clarify responses, use the space provided in Appendix D.
- ▶ Some questions may go beyond the scope of the HRS scoring package (e.g., may relate to pathways not scored). Answer these questions with the best information available, making reasonable “educated guesses” if necessary.
- ▶ “Current,” as used in this form, should be interpreted as the general time period of HRS scoring package preparation.
- ▶ “Principal contamination,” as used in this form, should be interpreted as the contamination that is primarily responsible for a site's proposal to the NPL.

Please respond to *all* questions with the answer that you believe best represents the site conditions, given the information available at the time of HRS scoring package preparation.

1. Basic Identifying Information

1.1 **SITE NAME** (as shown on HRS Documentation Record): Booker Landfill
SITE ALIASES (if any): _____

1.2 **CERCLIS ID NUMBER** (12 digits): TXN000605565
Are there any other sites associated with this site? Please list their CERCLIS ID numbers:

--	--	--	--	--

1.3 **SITE ID** from CERCLIS3/WasteLAN (7 digits): _____

1.4 **CERCLIS SITE SPILL ID** (4 digits): _____

1.5 **NAME OF PERSON(S) COMPLETING FORM:** Michelle Brown
AFFILIATION (agency/company): Weston Solutions
PHONE NUMBER: 469-374-7700

1.6 **DATE FORM WAS COMPLETED** (mm/dd/yyyy): 12/30/2003

1.7 **SITE LOCATION.**
Address or General Site Location: 1400 W. Tidwell Road
City: Houston State: TX
County: Harris Zip Code of Facility: 77091
Congressional District(s): 18 EPA Region: 6
Congressional District Representatives: Jackson-Lee

1.8 **SITE COORDINATES.** Coordinates in degrees, minutes, seconds, and tenths of seconds and decimal degree formats: *If known, please provide site boundary polygon data in Appendix A.*

	North Latitude		West Longitude
29.84664	North Latitude	95.43362	West Longitude

If tenths of seconds are unknown, use "0" as a default value. If necessary, refer to Appendix E of EPA's 1991 PA guidance document for directions on how to determine coordinates.

Description of Site Reference Point for Coordinates: _____
Coordinates taken at former entry to Booker Landfill site

Description Category. Describe the category of feature referenced by the site coordinates.

- ☐ Administrative building
- ☐ Air monitoring station
- ☐ Air release
 - ☐ Stack
 - ☐ Vent
- ☐ Atmosphere emissions treatment unit

- ☐ Center of facility
- ☐ Facility centroid
- ☐ Lagoon or settling pond
- ☐ Liquid waste treatment unit
- ☐ Loading area centroid
- ☐ Loading facility
- ☒ Northeast corner of land parcel
- ☐ Northwest corner of land parcel
- ☐ Plant entrance
 - ☐ General
 - ☐ Personnel
 - ☐ Freight
- ☐ Process unit
- ☐ Process unit area centroid
- ☐ Solid waste treatment/disposal unit
- ☐ Solid waste storage area
- ☐ Southeast corner of land parcel
- ☐ Southwest corner of land parcel
- ☐ Storage tank
- ☐ Water monitoring station
- ☐ Water release pipe
- ☐ Well
- ☐ Well protection area
- ☐ Within limits of groundwater plume
- ☐ Other (specify) _____
- ☐ Unknown

Method of Collection. Describe the method used to determine the site coordinates.

- ☐ Address matching
 - ☐ Block face
 - ☐ Digitized
 - ☐ House number
 - ☐ Nearest intersection
 - ☐ Primary name
 - ☐ Street centerline
 - ☐ Other (specify) _____
- ☐ Census
 - ☐ Block - 1990 - centroid
 - ☐ Block/group - 1990 - centroid
 - ☐ Block tract - 1990 - centroid
 - ☐ Other (specify) _____
- ☐ Classical surveying techniques
- ☒ Global Positioning System (GPS)

- ☐ Carrier phase kinematic relative positioning technique
- ☐ Carrier phase static relative positioning technique
- ☐ Code measurements (pseudo range) differential (DGPS)
- ☐ Code measurements (pseudo range) precise positioning service
- ☐ Code measurements (pseudo range) standard positioning service SA off
- ☐ Code measurements (pseudo range) standard positioning service SA on
- ☐ Interpolation
 - ☐ Map
 - ☐ Photo
 - ☐ Satellite
 - ☐ Other (specify) _____
- ☐ Loran C
- ☐ Public land survey
 - ☐ Footing
 - ☐ Quartering
- ☐ Zip code centroid
- ☐ Other (specify) _____
- ☐ Unknown

Accuracy Value. Describe the accuracy value as a range (+/-) of the latitude and longitude in meters.

Accuracy: +/- _____ Meters

Vertical Measure. Provide the vertical component of measured point. If no vertical component, leave blank.

Horizontal Datum. Describe the reference datum of the latitude and longitude.

- ☐ NAD27
- ☐ NAD83
- ☐ Other (specify) _____
- ☐ Unknown

Source Scale. Describe the scale of the source used to determine the site coordinates.

- ☐ 1:10,000
- ☐ 1:12,000
- ☐ 1:15,840
- ☐ 1:20,000
- ☐ 1:24,000
- ☐ 1:25,000
- ☐ 1:50,000
- ☐ 1:62,500
- ☐ 1:63,360
- ☐ 1:100,000
- ☐ 1:125,000
- ☐ 1:250,000
- ☐ 1:500,000
- ☐ None
- ☐ Other (specify) _____

- ☐ Unknown

1.9 **NAME OF WATERSHED.** Watershed in which the site is located, from Surf Your Watershed at <http://www.epa.gov/surf2/locate/>: Buffalo-San Jacinto

USGS Hydrologic Cataloging Code (8 digits): 12040104

1.10 **BASIS FOR NPL LISTING.** What is the reason for listing on the NPL?

- ☐ HRS Score \geq 28.50
☐ Agency for Toxic Substances and Disease Registry (ATSDR) Health Advisory
☐ State Priority

1.11 **RCRA STATUS.** What is the current RCRA status of the site? (Check all that apply.)

- ☐ RCRA hazardous waste handler not subject to RCRA Subtitle C corrective action
- ☐ Large quantity hazardous waste generator: Facility that generates over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month
- ☐ Small quantity hazardous waste generator: Facility that generated between 100 kg and 1,000 kg of hazardous waste per month
- ☐ Transporter: Entity that moves hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste
- ☐ Protective filer: Facility that has filed a RCRA Part A permit application for treatment, storage, or disposal of Subtitle C hazardous wastes as a precautionary measure only
- ☐ Facility subject to RCRA Subtitle C that meets listing policy
- ☐ Inability to finance: Facility is owned by persons who have demonstrated an inability to finance a cleanup as evidenced by their invocation of the bankruptcy laws
- ☐ Unwillingness/loss of authorization to operate: Facility that has lost authorization to operate or for which there are indications that the owner/operator will be unwilling to undertake corrective action; includes loss of interim status (LOIS) facilities
- ☐ Unwillingness/case-by-case determination: Facility that has a clear history of unwillingness as determined on a case-by-case basis
- ☐ Converter: Facility that at one time was treating or storing RCRA Subtitle C hazardous waste but has since converted to generator-only status or any other hazardous waste activity for which interim status is not required
- ☐ Non-filer or late filer: Facility that was treating, storing, or disposing of Subtitle C hazardous waste after November 19, 1980, and did not file Part A of a permit application by the date prescribed in 40 CFR 270.10 and has little or no history of RCRA compliance
- ☐ Pre-HSWA permittee: Facility that received a RCRA Subtitle C operating permit for the treatment, storage, or disposal of Subtitle C hazardous waste that was issued prior to the enactment of HSWA, and whose owner/operator will not voluntarily consent to the reissuance of their permit to include corrective action requirements
- ☐ RCRA corrective action facility
- ☒ Not applicable (e.g., non-generator or very small quantity generator)

1.12 **SITE PERMITS.** Which of the following permits apply to the site? (Check all that apply.)

- ☐ Air
- ☐ Dredge and fill
- ☐ Marine
- ☐ NPDES (National Pollutant Discharge Elimination System)
- ☐ POTW (Publicly Owned Treatment Works)

- ☐ Radioactive
- ☐ RCRA
- ☐ RCRA interim status
- ☐ SMCRA (Surface Mining Control and Reclamation Act)
- ☐ Underground injection

1.13 **ATSDR HEALTH ADVISORY.** Has an ATSDR Health Advisory been issued?

- ☐ Yes ☒ No If yes, what was the date of issue? _____ mm/dd/yyyy

ATSDR HEALTH ASSESSMENT. Has an ATSDR Health Assessment been conducted?

- ☐ Yes ☐ No If yes, what was the date of the assessment? _____ mm/dd/yyyy

1.14 **SITE STATUS.** Is the site a Federal Facility or a General site?

- ☐ Federal
- ☐ General

1.15 **HOW INITIALLY IDENTIFIED.** How was the site initially identified to EPA? If this information is not available in the HRS scoring package, check the PA narrative or other parts of the site file. (Check one.)

- ☐ Anonymous
- ☐ CERCLA notification
- ☒ Citizen complaint (including PA petition)
- ☐ Incidental (e.g., identified while discovering/investigating another NPL site)
- ☐ RCRA notification
- ☐ State/local program
- ☐ Other Federal program (specify) _____
- ☐ Other (specify) _____
- ☐ Unknown

1.16 **SITE WITH UNKNOWN SOURCE(S).** Does the site consist exclusively of contaminated ground water or contaminated surface water sediments with *no identifiable primary source(s)*? (Check one.)

- ☐ Yes, ground water plume(s)
- ☐ Yes, surface water sediments
- ☒ No

2. General Site Description

2.1 **DEMOGRAPHIC SETTING.** Characterize the area in which the site is located. (Check one.)

- ☐ Large city: within boundaries of a city with a population $\geq 100,000$
- ☐ Rural: outside of city and suburban areas
- ☐ Small city/town: within boundaries of a city/town with a population $\geq 10,000$ and $< 100,000$
- ☒ Suburban: within immediate suburbs of a city

2.2 **BORDER SITES.** Is the site within 60 miles of Mexican or Canadian borders?

- ☐ Yes ☒ No

2.3 **TRIBAL SITES.** Is the site on or near (i.e., within a four-mile radial distance, or for surface water within 15 “in-water” miles) Tribal Lands?

- ☐ Near designated Tribal Lands

Name of Tribe(s): _____

Distance from (in miles): _____

- ☐ On designated Tribal Lands

Name of Tribe(s): _____

- ☐ Not on or near Tribal Lands

2.4 **OTHER NPL SITES.** Are there other NPL sites within one mile of the site?

- ☐ Yes ☒ No

If yes, what sites? _____

2.5 **LAND USE.** What is the current land use(s) within one mile of the site? (Check all that apply.)

- ☐ Agricultural
☐ Airport
☐ Church
☐ Commercial
☐ DOE (Department of Energy)
☐ Desert
☐ Forest/fields/wetlands/other undeveloped
☐ Highway
☐ Hospital
☐ Indian lands
☐ Industrial
☐ Major excavation
☐ Military
☐ Mining
☐ Oil wells
☐ POTW (Publicly Owned Treatment Works)
☒ Parks/recreation
☐ Pipeline
☐ Prison
☐ Railroad
☒ Residential
☐ Sawmill
☐ School/university/day care
☐ Sink holes
☐ Water works
☐ Other (specify) _____
☒ Unknown

If **readily available information** indicates that projected future land use(s) within one mile of the site may **differ** from the current use(s) checked above (e.g., building a mobile home park adjacent to a former landfill), write them in the blank that follows. Use the response options listed above if possible.

- 2.6 **AREA.** What is the approximate area of contamination (i.e., total area that includes all sources of contamination and other areas where contamination has come to be located, plus the area between the sources)? If the site property is large with only a small contaminated portion, only the area of the contaminated portion should be estimated. If the approximate area of contamination cannot be estimated, use the area within the property boundary. (Check one.)

- ☐ ≤ 5 acres
☐ > 5 and ≤ 20 acres
☒ > 20 and ≤ 100 acres
☐ > 100 acres
☐ Unknown

- 2.7 **OWNER AND OPERATOR.** Who are the current owner(s) and operator(s) of the site, and who were the owner(s) and operator(s) at the time of principal contamination? If the owner and operator are the same, then check the same box under "Owner(s)" and "Operator(s)." If the current owner and/or operator and the owner and/or operator at time of principal contamination are the same, then check the same box under "CURRENT" and "AT TIME OF CONTAMINATION." For ground water plume and surface water sediment sites with no identified source, the owner and operator at the time of contamination should be "Unknown." (Check all that apply, including at least one in each column; "NA" indicates that a response is not applicable.)

CURRENT		AT TIME OF CONTAMINATION		
Owner(s)	Operator(s)	Owner(s)	Operator(s)	
<input type="checkbox"/>	<input type="checkbox"/>	Bankruptcy/receivership	NA	NA
<input type="checkbox"/>	<input type="checkbox"/>	County/city	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Federal	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	NA	Government Owned Contractor Operated (GOCO)	<input type="checkbox"/>	NA
<input type="checkbox"/>	<input type="checkbox"/>	Indian lands	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	None - currently inactive or abandoned	NA	NA
NA	<input type="checkbox"/>	None - spill or other one-time event	NA	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Private - individual	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Private - industrial/commercial	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Private- small business	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	State	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	NA	Other (specify) _____	NA	NA
NA	<input type="checkbox"/>	Other (specify) _____	NA	NA
NA	NA	Other (specify) _____	<input type="checkbox"/>	NA
NA	NA	Other (specify) _____	NA	<input type="checkbox"/>
NA	NA	Unknown	<input type="checkbox"/>	<input type="checkbox"/>

- 2.8 **SPILL/OTHER ONE-TIME EVENT.** Is the site the result of a one-time spill (e.g., truck, rail car, or barge accident) or other one-time event (e.g., one-time illegal dumping), with no other ongoing waste management or waste generation activities on-site? (Check one.)

- ☐ Yes, specify year of spill/other one-time event _____
☒ No

- 2.9 **YEARS OF OPERATION.** What are the beginning and ending years of operation at the site? "Operation" includes any activity occurring at the site (other than site remediation and related site investigation activity), and does **not** necessarily have to involve waste generation and/or management. Aggregated sites that have a combination of active and inactive/abandoned operations, and active sites that have had periods of inoperation during their existence, should be considered currently operating. For these sites, indicate the beginning year of their earliest operation. If sites such as these are no longer operating, indicate the beginning year of their earliest operation and the ending year of their latest operation. For ground water plume and surface water sediment sites with no identified source, the years of operation should be "Unknown." (Check one.)

- ☐ Currently operating: from (beginning year)
- ☒ Inactive or abandoned: from (beginning year) 1970 to (ending year) 2004
- ☐ Unknown (only if **no** historical information is available)

- 2.10 **YEARS OF WASTE MANAGEMENT ACTIVITIES.** What are the beginning and ending years of waste management at the site? Applicable waste management activities include generation, treatment, and/or recycling of waste containing hazardous substances and/or receipt of such wastes from off-site sources. Aggregated sites that have a combination of active and inactive/abandoned waste management activities, and sites that are actively managing waste that have had periods without waste management activities during their existence, should be considered currently managing waste. For these sites, indicate the beginning year of their earliest waste management activity. If sites such as these are no longer managing waste, indicate the beginning year of their earliest activity and the ending year of their latest activity. All responses should be consistent with responses given for question 2.9. For ground water plume and surface water sediment sites with no identified source, the response should be "Unknown." (Check one.)

- ☐ Currently managing waste: from (beginning year)
- ☒ No longer managing waste: from (beginning year) 1970 to (ending year) 2004
- ☐ Unknown (only if **no** historical information is available)

3. Site Type

- 3.1 **PRIMARY SITE ACTIVITY TYPE.** Which of the following best describes the primary activity at the site? The primary site activity type is defined as the main operation that is taking place, or has taken place, at the site and was a major contributor of the hazardous substance releases that caused the site to be considered for the NPL. The primary site activity types are defined in Appendix B. There are five major categories for primary site activity type and each of these categories has many sub-categories. Please select only one category (e.g., Mining) and only one sub-category within the category (e.g., Metals). For ground water plume sites with no identified source, the response should be "Other, Ground water plume." For surface water sediment sites with no identified source, the response should be "Other, Surface water sediment site." If the site has a secondary site activity type, please list it in the space provided below. (Select one type.)

- ☐ Manufacturing/processing/maintenance
- ☐ Chemicals and allied products
 - ☐ Coal gasification
 - ☐ Coke production
 - ☐ Electronic/electrical equipment
 - ☐ Electric power generation and distribution
 - ☐ Fabrics/textiles
 - ☐ Lumber and wood products/pulp and paper
 - ☐ Lumber and wood products/wood preserving/treatment

- ☐ Metal fabrication/finishing/coating and allied industries
- ☐ Oil and gas refining
- ☐ Ordnance production
- ☐ Plastics and rubber products
- ☐ Primary metals/mineral processing
- ☐ Radioactive products
- ☐ Tanneries
- ☐ Trucks/ships/trains/aircraft and related components
- ☐ Other (specify) _____
- ☐ Mining
 - ☐ Coal
 - ☐ Metals
 - ☐ Non-metal minerals
 - ☐ Oil and gas
 - ☐ Other (specify) _____
- ☐ Recycling
 - ☐ Automobiles/tires
 - ☐ Batteries/scrap metal/secondary lead smelting/precious metal recovery
 - ☐ Chemicals/chemical wastes (e.g., solvent recovery)
 - ☐ Drums/tanks
 - ☐ Waste/used oil
 - ☐ Other (specify) _____
- ☐ Waste management
 - ☐ Co-disposal landfill (municipal and industrial)
 - ☐ Illegal disposal/open dump
 - ☐ Industrial waste facility (non-generator)
 - ☐ Industrial waste landfill
 - ☐ Mine tailings disposal
 - ☒ Municipal solid waste landfill
 - ☐ Radioactive waste treatment, storage, disposal (non-generator)
 - ☐ Other (specify) _____
- ☐ Other
 - ☐ Agricultural (e.g., grain elevator)
 - ☐ Contaminated sediment site (with no identified source, must also answer yes to question 1.16)
 - ☐ Ground water plume (with no identified source, must also answer yes to question 1.16)
 - ☐ Military
 - ☐ Product storage/distribution facility
 - ☐ Research, development, and testing facility
 - ☐ Retail/commercial
 - ☐ Spill or other one-time event
 - ☐ Spraying or spreading substances for dust control
 - ☐ Transportation (e.g., railroad yard, airport, barge docking site)
 - ☐ Treatment works/septic tanks/other sewage treatment
 - ☐ _____

Other (specify) _____

If the site has one or more *secondary* site activity type(s), please indicate the activity type in the space below. Use the responses above with the addition of "Residential" as a selection.

- 3.2 **SITE ACTIVITIES.** Which of the following best describes current activities/operations/conditions at the site (i.e., on-site activities)? Also, identify all former activities that are at least partly responsible for the principal contamination at the site. Check ALL responses that apply, including at least one in each column; if a main category is checked, at least one sub-category also must be checked (e.g., if "Federal facility" is checked, a sub-category such as "DOE" also must be checked). For ground water plume sites with no identified source, the response should be "Ground water plume." For surface water sediment sites with no identified source, the response should be "Surface water sediment site."

Current Former

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Agricultural |
| <input type="checkbox"/> | <input type="checkbox"/> | Federal facility (must also indicate Federal in question 2.7) |
| <input type="checkbox"/> | <input type="checkbox"/> | DOD |
| <input type="checkbox"/> | <input type="checkbox"/> | Ordnance production/storage |
| <input type="checkbox"/> | <input type="checkbox"/> | Testing and maintenance |
| <input type="checkbox"/> | <input type="checkbox"/> | DOE |
| <input type="checkbox"/> | <input type="checkbox"/> | DOI (e.g., Bureau of Land Management) |
| <input type="checkbox"/> | <input type="checkbox"/> | USDA (e.g., Forest Service) |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify) _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | Ground water plume (with no identified source, must also answer yes to question 1.16) |
| <input type="checkbox"/> | <input type="checkbox"/> | Laundries/dry cleaners |
| <input type="checkbox"/> | <input type="checkbox"/> | Manufacturing/processing |
| <input type="checkbox"/> | <input type="checkbox"/> | Chemicals and allied products |
| <input type="checkbox"/> | <input type="checkbox"/> | Chemicals |
| <input type="checkbox"/> | <input type="checkbox"/> | Pesticides/herbicides |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify) _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric power generation and distribution |
| <input type="checkbox"/> | <input type="checkbox"/> | Electronic/electrical equipment |
| <input type="checkbox"/> | <input type="checkbox"/> | Electroplating |
| <input type="checkbox"/> | <input type="checkbox"/> | Lumber and wood products |
| <input type="checkbox"/> | <input type="checkbox"/> | Pulp and paper |
| <input type="checkbox"/> | <input type="checkbox"/> | Wood preserving/treatment |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify) _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | Metal fabrication/finishing/coating and allied industries |
| <input type="checkbox"/> | <input type="checkbox"/> | Ore processing |
| <input type="checkbox"/> | <input type="checkbox"/> | Petroleum refining |
| <input type="checkbox"/> | <input type="checkbox"/> | Plastic and rubber products |
| <input type="checkbox"/> | <input type="checkbox"/> | Primary metals/mineral processing |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify) _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | Mining |
| <input type="checkbox"/> | <input type="checkbox"/> | Coal |

- ☐ ☐ Metals
☐ ☐ Non-metal minerals
☐ ☐ Oil and gas
☐ ☐ Subsurface
☐ ☐ Surface
☐ ☐ Other (specify) _____
☐ N/A None/currently inactive or abandoned
☐ ☐ Product storage/distribution as *principal* activity
☐ ☐ Residential
☐ ☐ Retail/commercial
☐ ☐ Road oiling
☐ N/A ☐ Spill or other one-time event, with no other activities (must also indicate spill in question 2.8)
☐ ☐ Surface water sediment site (with no identified source, must also answer yes to question 1.16)
☐ ☐ Transportation (e.g., railroad yard, airport, barge docking site)
☐ ☐ Waste management
☐ ☒ Illegal/open dump
☐ ☒ Municipal solid waste landfill
☐ ☐ Other industrial waste facility, including landfill (non-generator)
☐ ☐ Publicly owned treatment works/septic tanks/other sewage treatment
☐ ☐ RCRA Subtitle C TSDF (non-generator)
☐ ☐ Radioactive waste treatment, storage, disposal (non-generator)
☐ ☐ Recycling
☐ ☐ Automobiles/scrap metal/tires
☐ ☐ Batteries
☐ ☐ Chemicals/chemical wastes (e.g., solvent recovery)
☐ ☐ Drums
☐ ☐ Used/waste oil
☐ ☐ Other (specify) _____
☐ ☐ Other (specify) _____
☐ ☐ Other (specify) _____
☒ ☐ Unknown

3.3 **WASTE TREATMENT, STORAGE, AND DISPOSAL ACTIVITIES.** What treatment, storage, and/or disposal activities occur/occurred at the site? For ground water plume and surface water sediment sites with no identified source, the response should be "Unknown." (Check all that apply.)

- ☐ Discharge to sewer/surface water (intentional permitted or illegal discharge; *not* secondary runoff)
☐ Drain/leach field
☐ Drum/container storage (intentional storage in specified areas)
☐ Explosives disposal/detonation
☒ Illegal dumping (unpermitted dumping by site owner/operator in undesignated disposal area)
☐ Incineration/other combustion activity (including burn pits)
☐ Industrial landfill

- ☐ Land application/treatment
- ☐ Leaking containers
- ☒ Municipal landfill (must also indicate municipal solid waste landfill in question 3.2)
- ☐ None/spill or other one-time event (must also indicate spill in question 2.8)
- ☐ Outfall, surface water
- ☐ Recycling (must also indicate recycling in question 3.2)
- ☐ Sand/gravel pit
- ☐ Sinkhole
- ☐ Surface impoundment (primarily liquid)
- ☐ Tank - above ground
- ☐ Tank - below ground
- ☐ Thermal treatment
- ☐ Unauthorized dumping by a party other than the site owner/operator
- ☐ Underground injection well
- ☐ Waste pile (primarily solid, covered or uncovered)
- ☐ Other (specify) _____
- ☐ Unknown

3.4 **SOURCE TYPES.** What HRS source types exist/existed at the site? For ground water plume sites with no identified source, the response should be "Ground water plume." For surface water sediment sites with no identified source, the response should be "Surface water sediment site." (Check all that apply.)

- ☐ Active fire area
- ☐ Burn pit
- ☐ Container or tank
- ☒ Contaminated soil (excluding land treatment)
- ☐ Drum
- ☐ Ground water plume (with no identified source, must also answer yes to question 1.16)
- ☐ Landfarm/land treatment
- ☐ Landfill
- ☐ Piles
 - ☐ Chemical waste pile
 - ☐ Scrap metal or junk pile
 - ☐ Tailings pile
 - ☐ Trash pile
 - ☐ Other (specify) _____
- ☐ Surface impoundment
- ☐ Surface impoundment (buried/backfilled)
- ☐ Surface water sediment site (with no identified source, must also answer yes to question 1.16)
- ☐ Tank - above ground
- ☐ Tank - below ground
- ☐ Unallocated source
- ☐ Other (specify) _____

4. **Waste Description**

- 4.1 **ON-SITE/OFF-SITE GENERATION.** Is an on-site or off-site generator responsible for the waste disposed or deposited on-site that resulted in the principal contamination? For consistency, recycling facilities should be considered on-site generators. (Check one.)

- ☐ On-site generator(s) only
☒ Off-site generator(s) only
☐ Both on-site and off-site generators

- 4.2 **ENTITY THAT GENERATED THE WASTE.** What is the source(s) of the waste disposed or deposited on-site that resulted in the principal contamination (*not* necessarily the entity that generated the original product)? Note that this question is different from question 3.2 regarding site activities, although the response options are similar. This question targets those entities that generated the waste present on-site, not the site activities themselves, regardless of whether those entities are located on- or off-site. However, if the waste is/was generated entirely on-site, then the response(s) to this question should match the response(s) to question 3.2. For ground water plume sites with no identified source, the response should be "Ground water plume." For surface water sediment sites with no identified source, the response should be "Surface water sediment site." (Check all that apply.)

- ☐ Agricultural
☐ Construction/demolition
☐ Federal facility
☐ DOD
☐ Ordnance production/storage
☐ Testing and maintenance
☐ DOE
☐ DOI
☐ USDA
☐ Other (specify) _____
☐ Ground water plume (with no identified source, must also answer yes to question 1.16)
☐ Laboratory/hospital
☐ Laundries/dry cleaners
☐ Manufacturing
☐ Chemicals and allied products
☐ Chemicals
☐ Pesticides/herbicides
☐ Other (specify) _____
☐ Electric power generation and distribution
☐ Electronic/electrical equipment
☐ Electroplating
☐ Lumber and wood products
☐ Pulp and paper
☐ Wood preserving/treatment
☐ Other (specify) _____
☐ Metal fabrication/finishing/coating and allied products
☐ Ore processing
☐ Petroleum refining

- ☐ Plastic and rubber products
- ☐ Primary metals/mineral processing
- ☐ Other (specify) _____
- ☐ Mining
 - ☐ Coal
 - ☐ Metals
 - ☐ Non-metal minerals
 - ☐ Oil and Gas
 - ☐ Subsurface
 - ☐ Surface
 - ☐ Other (specify) _____
- ☐ Product storage/distribution facility
- ☐ Recycling
 - ☐ Automobile junkyard/scrap metal/tires
 - ☐ Batteries
 - ☐ Chemicals/chemical wastes (e.g., solvent recovery)
 - ☐ Drums
 - ☐ Used/waste oil
 - ☐ Other (specify) _____
- ☐ Residential
- ☐ Retail/commercial
- ☐ Road oiling
- ☐ Site remediation (e.g., wastes from site cleanups)
- ☐ Surface water sediment site (with no identified source, must also answer yes to question 1.16)
- ☐ Transportation (e.g., railroad yard, airport, barge docking site)
- ☐ Waste management (e.g., leachate or ash from waste treatment processes)
- ☐ Other (specify) _____
- ☒ Unknown

4.3 **PHYSICAL STATE OF WASTE.** What is the physical state(s) of the hazardous substance-containing waste(s) deposited or detected on-site? (Check all that apply.)

- ☐ Gas
- ☐ Liquid
- ☐ Sludge
- ☒ Solid
- ☐ Unknown

4.4 **GENERAL WASTE TYPES.** What are the waste types deposited or detected on-site? Indicate all the waste types present on-site under "Overall." If three or fewer waste types are known to comprise the majority (i.e., over 50%) of the waste volume on-site, indicate their types under "Predominant." Otherwise, leave the "Predominant" column blank. (Check all that apply.)

- | Overall | Predominant | |
|--------------------------|--------------------------|----------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Chlorinated solvents |
| <input type="checkbox"/> | <input type="checkbox"/> | Contaminated soil/sediment |
| <input type="checkbox"/> | <input type="checkbox"/> | Explosives |

- | | | |
|-------------------------------------|-------------------------------------|-------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Fly and bottom ash |
| <input type="checkbox"/> | <input type="checkbox"/> | Fuels/propellants |
| <input type="checkbox"/> | <input type="checkbox"/> | Medical/biological wastes |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Metals |
| <input type="checkbox"/> | <input type="checkbox"/> | Mining wastes |
| <input type="checkbox"/> | <input type="checkbox"/> | Non-metal inorganic chemicals |
| <input type="checkbox"/> | <input type="checkbox"/> | Oily wastes |
| <input type="checkbox"/> | <input type="checkbox"/> | Organic chemicals |
| <input type="checkbox"/> | <input type="checkbox"/> | POTW sludge |
| <input type="checkbox"/> | <input type="checkbox"/> | Paints/pigments |
| <input type="checkbox"/> | <input type="checkbox"/> | Pesticides/herbicides |
| <input type="checkbox"/> | <input type="checkbox"/> | Radioactive wastes |
| <input type="checkbox"/> | <input type="checkbox"/> | Still and tank bottoms |
| <input type="checkbox"/> | <input type="checkbox"/> | Strong acids/bases |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify) _____ |

4.5 **SPECIFIC WASTE CONSTITUENTS.** Which of the following waste constituents have been deposited or detected on-site? (Check all that apply, and make sure the response is consistent with the response to question 4.4.)

- ☐ Asbestos
- ☐ Creosote
- ☐ Cyanides
- ☐ Dioxins (e.g., TCDD)
- ☒ Lead
- ☐ Mercury
- ☐ Pentachlorophenol (PCP)
- ☐ Polychlorinated biphenyls (PCBs)
- ☐ Polycyclic aromatic hydrocarbons (PAHs)
- ☐ None of the above
- ☐ Other (specify) _____

4.6 **WASTE ACCESSIBILITY.** Is the waste on-site currently accessible to the public (e.g., is site access unrestricted so people can potentially come into direct contact with contaminated materials)? Items to be considered when judging accessibility include, for example, presence or absence of a complete cover over the waste area and a secure fence around the site. A site with natural access restrictions (e.g., steep terrain) also can be considered inaccessible. Do not count on-site workers as part of the public when answering this question. (Check one.)

- ☒ Yes
- ☐ No
- ☐ Unknown

5. **Demographics**

For this section, do not directly use the population factor values calculated in the HRS and entered in HRS scoresheets. Use actual (i.e., unweighted, unadjusted) population figures, which should be available in the HRS supporting documentation.

- 5.1 **NUMBER OF WORKERS ON-SITE.** What is the current number of workers present on-site (not including workers involved in response activities)? For ground water plume and surface water sediment sites with no identified source, the response should be "Unknown." (Check one.)

- ☒ 0
☐ > 0 and ≤ 10
☐ > 10 and ≤ 100
☐ > 100 and ≤ 1,000
☐ > 1,000
☐ Unknown

- 5.2 **DISTANCE TO POPULATION.** What is the shortest distance from any source or area of contamination at the site to the nearest residential individual (include all persons occupying homes, apartments, businesses, or schools)? If contamination has migrated to the property of a nearby resident(s), then check the box next to "0 miles." If the source or contaminated area is not clearly identified, use distance from the site property boundary. (Check one.)

- ☐ 0 miles (i.e., on-site)
☒ > 0 and ≤ $\frac{1}{4}$ mile
☐ > $\frac{1}{4}$ and ≤ $\frac{1}{2}$ mile
☐ > $\frac{1}{2}$ and ≤ 1 mile
☐ > 1 and ≤ 4 miles
☐ > 4 miles

- 5.3 **POPULATION.** What is the total residential population within one mile and four miles of the site (include all persons occupying homes, apartments, businesses, or schools)? (Check one in each column.)

- | Within
1 mile | Within
4 miles | |
|-------------------------------------|-------------------------------------|------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | 0 |
| <input type="checkbox"/> | <input type="checkbox"/> | > 0 and ≤ 10 |
| <input type="checkbox"/> | <input type="checkbox"/> | > 10 and ≤ 100 |
| <input type="checkbox"/> | <input type="checkbox"/> | > 100 and ≤ 1,000 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | > 1,000 and ≤ 10,000 |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | > 10,000 and ≤ 100,000 |
| <input type="checkbox"/> | <input type="checkbox"/> | > 100,000 |
| <input type="checkbox"/> | <input type="checkbox"/> | Unknown |

6. **Water Use**

For the purposes of this section, "local" refers to ground water withdrawals within four miles and surface water withdrawals within 15 "in-water" miles (e.g., downstream miles for streams and rivers) of the site (i.e., within HRS target distance limits).

- 6.1 **TOTAL DRINKING WATER POPULATION SERVED.** What is the total population served by local ground and surface water sources of drinking water? Use actual population numbers and not adjusted values taken directly from HRS scoresheets. For blended systems, use total population served instead of prorated values. Note that the total population served does not have to reside within the HRS target distance limits, only the drinking water supply withdrawal point(s) needs to be within the limits. (Check one in each column.)

Ground	Surface	
--------	---------	--

- | | | |
|-------------------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | ≤ 10 |
| <input type="checkbox"/> | <input type="checkbox"/> | > 10 and ≤ 100 |
| <input type="checkbox"/> | <input type="checkbox"/> | > 100 and ≤ 1,000 |
| <input type="checkbox"/> | <input type="checkbox"/> | > 1,000 and ≤ 10,000 |
| <input type="checkbox"/> | <input type="checkbox"/> | > 10,000 and ≤ 100,000 |
| <input type="checkbox"/> | <input type="checkbox"/> | > 100,000 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Not applicable (no drinking water withdrawals within HRS target distance limits) |
| <input type="checkbox"/> | <input type="checkbox"/> | Unknown |

- 6.2 **TYPE OF DRINKING WATER SUPPLY SYSTEM.** What type(s) of local drinking water supply system(s) is present? "Public" should be checked for any central water supply system, even if operated by a private entity. (Check all that apply.)

Ground	Surface	
--------	---------	--

- | | | |
|-------------------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Private (e.g., individual wells) |
| <input type="checkbox"/> | <input type="checkbox"/> | Public (serves over 25 people; e.g., municipal systems) |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Not applicable (no drinking water withdrawals within HRS target distance limits) |
| <input type="checkbox"/> | <input type="checkbox"/> | Unknown |

- 6.3 **OTHER GROUND WATER USES.** What are the other uses of ground water withdrawn within four miles of the site? (Check all that apply.)

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> | Commercial uses (e.g., food preparation, aquaculture) |
| <input checked="" type="checkbox"/> | Industrial process/cooling |
| <input type="checkbox"/> | Irrigation |
| <input type="checkbox"/> | Recreation (e.g., water supply for municipal swimming pool, infiltration into lakes used for recreation) |
| <input type="checkbox"/> | Stock watering |
| <input type="checkbox"/> | Other (specify) _____ |
| <input type="checkbox"/> | None |
| <input checked="" type="checkbox"/> | Unknown |

- 6.4 **DEPTH TO AQUIFER.** What is the approximate depth from the ground surface to the uppermost usable aquifer (i.e., an aquifer having sufficient yield and water quality to be usable as drinking water or for other beneficial uses) beneath the site? (Check one.)

- ☐ ≤ 10 feet
- ☐ > 10 and ≤ 25 feet
- ☐ > 25 and ≤ 50 feet
- ☐ > 50 and ≤ 100 feet
- ☒ > 100 feet
- ☐ Unknown

6.5 **OTHER SURFACE WATER USES.** What are the other uses of surface water withdrawn within 15 "in-water" miles of the site? (Check all that apply.)

- ☐ Commercial fishery, including aquaculture
- ☐ Industrial process/cooling
- ☐ Irrigation
- ☐ Not currently used, but designated by the state for potential drinking water use
- ☐ Other commercial uses
- ☒ Other recreation
- ☐ Recreational fishing
- ☐ Stock watering
- ☐ Other (specify) _____
- ☐ None
- ☐ Unknown

6.6 **TYPE OF SURFACE WATER ADJACENT TO/DRAINING SITE.** What are the type(s) of surface water adjacent to/draining the site that could potentially be affected by overland runoff from the site (i.e., are within two miles of any source)? Indicate whether the water body is known or suspected of being contaminated by the site. "Yes" would indicate that the surface water body meets the HRS criteria for observed release. "Suspected" would indicate that there is some evidence of contamination that is attributable to the site, but the surface water body does not meet the HRS criteria for observed release. (Check all that apply.)

- | | Contaminated? | | | |
|--|------------------------------|------------------------------------|-----------------------------|---|
| | Yes | Suspected | No | Unknown |
| <input type="checkbox"/> Bay | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Canal | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Drainage ditch | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Intermittent stream | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Lake/reservoir | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Ocean | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input checked="" type="checkbox"/> Perennial stream | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input checked="" type="checkbox"/> Unknown |
| <input type="checkbox"/> Pond | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> River (> 1,000 cfs annual average flow) | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Wetland | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Other (specify) _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> Suspected | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> No surface water within two miles | | | | |
| <input type="checkbox"/> Unknown | | | | |

7. **Sensitive Environment and Reported Environmental Damage Information**

7.1 **EXISTENCE OF SENSITIVE OR POTENTIALLY VULNERABLE ENVIRONMENT.** Is the site in or near (i.e., within a four-mile radial distance, or for surface water within 15 "in-water" miles) an HRS-designated sensitive environment(s) or other potentially vulnerable environment(s)? (Check all that apply.)

- ☐ Yes, HRS-designated sensitive environment(s)
 - ☐ Critical habitat for Federal designated endangered or threatened species
 - ☐ Areas identified under the Coastal Zone Management Act
 - ☐ Critical areas identified under the Clean Lakes Program
 - ☐ Designated Federal wilderness area
 - ☐ Marine sanctuary
 - ☐ National lakeshore recreational area
 - ☐ National monument
 - ☐ National park
 - ☐ National seashore recreational area
 - ☐ Sensitive areas identified under National Estuary Program or Near Coastal Water Program
 - ☐ Habitat known to be used by Federal designated or proposed endangered or threatened species
 - ☐ Administratively proposed Federal wilderness area
 - ☐ Coastal barrier (undeveloped)
 - ☐ Federal land designated for protection of natural ecosystems
 - ☐ Migratory pathways and feeding areas critical for maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time
 - ☐ National or State wildlife refuge
 - ☐ National preserve
 - ☐ National river reach designated as recreational
 - ☐ Spawning areas critical for the maintenance of fish/shellfish species within river, lake, or coastal tidal waters
 - ☐ Terrestrial areas utilized for breeding by large or dense aggregations of animals
 - ☐ Unit of coastal barrier resources system
 - ☐ Habitat known to be used by State designated endangered or threatened species
 - ☐ Coastal barrier (partially developed)
 - ☐ Federal designated scenic or wild river
 - ☐ Habitat known to be used by species under review as to its Federal endangered or threatened status
 - ☐ State designated areas for protection or maintenance of aquatic life
 - ☐ State land designated for wildlife or game management
 - ☐ Particular areas, relatively small in size, important to maintenance of unique biotic communities
 - ☐ State designated natural areas
 - ☐ State designated scenic or wild river
 - ☐ Wetland
 - ☐ Other (specify) _____
- ☐ Yes, other potentially vulnerable environment(s) (see Appendix C for definitions)
 - ☐ 100-year floodplain

- ☐ Karst terrain
- ☐ Seismic impact area
- ☐ Unstable terrain
- ☐ Vulnerable ground water (class I, as defined by EPA)
- ☐ Wellhead protection area
- ☐ Other (specify) _____
- ☒ No
- ☐ Unknown

7.2 **HUMAN HEALTH/BIOLOGICAL IMPACTS.** Have actual human health or biological impacts attributable to the site been shown to exist, been reported, or been observed? (Check all that apply.)

- ☐ Yes
 - ☐ Fauna (e.g., fish kills, wildlife impacts)
 - ☐ Flora (e.g., stressed vegetation)
 - ☐ Human health
 - ☐ Air pathway
 - ☐ Ground water pathway
 - ☐ Soil exposure
 - ☐ Resident population threat
 - ☒ Nearby population threat
 - ☐ Surface water pathway
 - ☐ Drinking water threat
 - ☐ Human food chain threat
 - ☐ Environmental threat
- ☐ No
- ☐ Unknown

8. Response Actions

8.1 **TYPE OF RESPONSE ACTION.** What type(s) of response actions has already occurred at or near the site? (Check all that apply.)

- ☐ Action has been taken to reduce an immediate threat of fire or explosion
- ☐ Alternate water supply(ies) has been provided (on or off site)
- ☐ Drinking water well(s) has been closed (on or off site)
- ☐ Residents have been relocated
- ☐ Site access has been restricted in response to the contamination
- ☐ Waste has been physically removed from the site
- ☐ Waste has been treated/stabilized/contained on-site
- ☐ Other (specify) _____
- ☐ Unknown
- ☒ None

8.2 **AUTHORITY RESPONSIBLE FOR RESPONSE ACTION.** Who performed (or contracted for) the response action(s)? (Check all that apply.)

- ☐

- EPA under authority of CERCLA
- ☐ EPA under other authority (specify) _____
- ☐ Private party (specify) _____
- ☐ State/local authority (specify) _____
- ☐ Other Federal agency (specify) _____
- ☐ Other (specify) _____
- ☒ Not applicable (check only if checked "None" in question 8.1)

STOP HERE. Section 9 will be completed by a Headquarters QA reviewer.

REVIEW OF COMPLETED FORM. When you have completed Sections 1 through 8 of the NPL Characteristics Data Collection Form, please check to *make sure* that:

- (1) All questions are answered; and
- (2) All questions have been answered such that the responses are internally consistent, especially those in Sections 2 and 3. For example, if the site is the result of a spill or other one-time event, the responses for questions 2.7, 2.8, 3.1, 3.2, and 3.3 should be consistent, while if the site is inactive or abandoned, the responses for questions 2.7, 2.9, 2.10, and 3.2 should be consistent.

2. Questions to be Completed by Headquarters QA Reviewer

- 9.1 **NAME OF QA REVIEWER:** _____
AFFILIATION (agency/company): _____
PHONE NUMBER: _____
- 9.2 **DATE QA COMPLETED FOR THIS FORM** (mm/dd/yyyy): 12/30/1899
- 9.3 **NPL PROPOSED RULE NUMBER** (i.e., NPL "Update" number): _____
- 9.4 **COMMENTS:** _____

Appendix A Site Boundary Polygon Data

1. **Site Boundary Coordinates.** Use this space to provide site boundary polygon coordinates (if known). Coordinates of the entire site should be provided in the form of polygons, starting with the northern-most coordinate and moving clockwise (in degrees, minutes, seconds, and tenths of seconds). If you need additional space to record site boundary coordinates, please copy this page and provide the data on those additional pages. If submitting electronic coordinates, follow requirements in the Partial Deletion Guidance.

North Latitude

29 50 47.9

West Longitude

095 26 01.0

If tenths of seconds are unknown, use "0" as a default value. If necessary, refer to Appendix E of EPA's 1991 PA guidance document for directions on how to determine coordinates.

2. **Description of Site Reference Area for Coordinates:** _____

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Appendix A Site Boundary Polygon Data (cont.)

3. **Method of Collection.** Describe the method used in collecting the data.

- ☐ Address matching
 - ☐ Block face
 - ☐ Digitized
 - ☐ House number
 - ☐ Nearest intersection
 - ☐ Primary name
 - ☐ Street centerline
 - ☐ Other (specify) _____
- ☐ Census
 - ☐ Block - 1990
 - ☐ Block/group - 1990
 - ☐ Block tract - 1990
 - ☐ Other (specify) _____
- ☐ Classical surveying techniques
- ☒ GPS
 - ☐ Carrier phase kinematic relative positioning technique
 - ☐ Carrier phase static relative positioning technique
 - ☐ Code measurements (pseudo range) differential (DGPS)
 - ☐ Code measurements (pseudo range) precise positioning service
 - ☐ Code measurements (pseudo range) standard positioning service SA off
 - ☐ Code measurements (pseudo range) standard positioning service SA on
- ☐ Interpolation
 - ☐ Map
 - ☐ Photo
 - ☐ Satellite
 - ☐ Other (specify) _____
- ☐ Loran C
- ☐ Public land survey
 - ☐ Quartering
 - ☐ Footing
- ☐ Zip code
- ☐ Other (specify) _____
- ☐ Unknown

4. **Accuracy Value and Unit.** Describe the accuracy value as a range (+/-) of the coordinates in meters.

Accuracy: +/- _____ Meters

Appendix A
Site Boundary Polygon Data (cont.)

5. **Vertical Measure.** Provide the vertical component of measured coordinates. If no vertical component, leave blank.

6. **Horizontal Datum.** Describe the reference datum of the coordinates.

- ☐ NAD27
☐ NAD83
☐ Other (specify) _____
☐ Unknown

7. **Source Scale.** Describe the scale of the source used to determine the coordinates.

- ☐ 1:10,000
☐ 1:12,000
☐ 1:15,840
☐ 1:20,000
☐ 1:24,000
☐ 1:25,000
☐ 1:50,000
☐ 1:62,500
☐ 1:63,360
☐ 1:100,000
☐ 1:125,000
☐ 1:250,000
☐ 1:500,000
☐ Other (specify) _____
☐ Unknown

Appendix B
Definitions of Primary Site Activity Types
(To be Used in Responding to Question 3.1)

Manufacturing/processing/maintenance: Activities resulting from the production of products from raw materials, the processing of materials, or the maintenance of a product.

Chemicals and allied products: Activities involving manufacturing, creating, or packaging of chemicals such as chloride, pharmaceutical chemicals, organic compounds, acids, pesticides, fertilizers, herbicides, insecticides, adhesives, glues, paints, or dyes, with the exclusion of primary metals. This includes chemicals that are manufactured to be used later for other purposes, such as creosote and coal tar.

Coal gasification: Activities related to the process of making natural gas from coal. Coal mining operations are not included in this subcategory.

Coke production: Activities involving the production of coke from coal.

Electronic/electrical equipment: Activities involving manufacturing or maintenance of electronic devices and electronic equipment such as computer components.

Electric power generation and distribution: Activities involving generation, distribution, or maintenance of electric power, including electric power plants, transmitter stations, or transformer stations.

Fabric/textiles: Activities associated with the processing and treating of fabrics or textiles.

Lumber and wood products/pulp and paper: Activities involving production of lumber, wood products, pulp, or paper. This does not include wood treating or preserving.

Lumber and wood products/wood preserving/treatment: Activities involving preserving and treating wood products. Common contaminants found at wood preserving sites include creosote, copper-chromate-arsenic (CCA), or pentachlorophenol (PCP).

Metal fabrication/finishing/coating and allied industries: Activities involving fabrication, finishing, coating, or plating of metals.

Oil and gas refining: Activities involving petroleum, oil, and gas refining and reformation.

Ordnance production: Activities related to manufacturing or maintenance of ammunition, artillery, explosives, or torpedoes.

Plastics and rubber products: Activities involving manufacturing of rubber products such as tires or plastics for a variety of uses.

Primary metals/mineral processing: Activities involving manufacturing and processing of raw materials exclusively through smelting of metals or processing of ores. This does not include mining operations but includes all mineral processing operations subsequent to mining. Recycling batteries and scrap metals, secondary smelting, and precious metal recovery are not included in this subcategory.

Radioactive products: Activities involving manufacturing, processing, refining, or milling of radioactive products such as radium, uranium, and vanadium.

Tanneries: Activities associated with the processing and treating of leather products.

Trucks/ships/trains/aircraft and related components: Activities related to manufacturing or maintenance of vehicles including trucks, ships, aircraft, and related components such as engines or drive train components.

Other: Activities that involve manufacturing, processing, or maintenance, but do not clearly fit into any of the above sub-categories.

Unknown: Activities that involve manufacturing, processing, or maintenance, but the specific activities are unknown.

Appendix B

Definitions of Primary Site Activity Types (cont.)

Mining: Operations involving surface and subsurface excavation for the purpose of extracting mineral substances. Do not use this category to describe former mining sites that have been used to deposit or store waste.

Coal: Operations involving coal excavation.

Metals: Operations involving mining of metals such as gold, silver, iron, or copper.

Non-metal minerals: Operations involving mining of non-metals such as sulfur or phosphorous.

Oil and gas: Operations involving extracting oil and natural gas from the ground.

Other: Activities that involve mining, but do not clearly fit into any of the above sub-categories, such as sand and gravel excavation.

Unknown: Activities that involve mining, but the specific activities are unknown.

Recycling: Activities involving the reprocessing of some product to regain material.

Automobiles/tires: Activities involving recovering products from automobiles such as tires and metals.

Batteries/scrap metals/secondary lead smelting/precious metal recovery: Activities related to reprocessing of batteries or scrap metals to gain another product. This subcategory includes precious metal recovery and secondary lead smelting.

Chemicals/chemical waste (e.g., solvent recovery): Activities which involve the recovery of chemicals such as solvents.

Drums/tanks: Activities involving processing of used drums or tanks.

Waste/used oil: Activities related to reprocessing waste oil to gain another product.

Other: Activities that involve recycling, but do not clearly fit into any of the above sub-categories.

Unknown: Activities that involve recycling, but the specific activities are unknown.

Waste management: Activities related to the treatment, storage, or disposal of waste.

Co-disposal landfill (municipal and industrial): A landfill which meets the definition of both an industrial and municipal landfill.

Illegal disposal/open dump: A disposal area where hazardous waste was dumped without authorization of the site owner or an open dump area.

Industrial waste landfill: An area used solely as a landfill where hazardous waste from a commercial or industrial source is disposed, regardless of whether the landfill is permitted by some government entity.

Industrial waste facility (non-generator): A facility which disposes, treats, or stores industrial waste. Examples of waste management operations that fit under this sub-category would be facilities that contain surface impoundments, incinerators, injection wells, open burn areas, or containers/drums/tanks.

Mine tailings disposal: An area where mine tailings, subsequent to mining, are disposed.

Municipal solid waste landfill: An area used solely as a landfill where domestic, demolition, construction, or sanitary waste is disposed, regardless of whether the landfill is permitted by some government entity.

Radioactive waste treatment, storage, disposal (non-generator): A facility which disposes, treats, or stores radioactive waste, but does not generate waste.

Other: Activities that involve waste management, but do not clearly fit into any of the above sub-categories.

Unknown: Activities that involve waste management, but the specific activities are unknown.

Appendix B

Definitions of Primary Site Activity Types (cont.)

Other: This category should only be used when a site activity does not fit into any of the other main categories.

Agricultural (e.g., grain elevator): A site at which agricultural activities such as farming or pesticide application occurred.

Contaminated sediment site: Contaminated surface water sediments with no identified source. For sites where the source of contamination is known, select the appropriate category/sub-category.

Ground water plume site: Contaminated ground water plume with no identified source. For plume sites where the source of contamination is known, select the appropriate category/sub-category.

Military: Activities at a military installation which could not specifically be assigned to any other category/subcategory (e.g., military base used for training, recruiting, or as a command center).

Product storage/distribution: Activities involving storage and/or distribution of items such as goods, products, or substances.

Research, development, and testing facility: A site that is used solely for research, development, and/or testing with no other site activities occurring.

Residential: A site used for residential purposes (including hotels). This sub-category can be used for Secondary Site Activity Type only.

Retail/commercial: A site which can be classified as being used for retail or commercial purposes such as a shopping center or dry cleaners.

Spill or other one-time event: A site that is the result of a one-time spill (e.g., truck, rail car, or barge accident) or other one-time event (e.g., one-time illegal dumping), with no other ongoing waste management or waste generation activities on-site.

Spraying or spreading substances for dust control: Activities involving spraying or spreading substances on the ground for purposes of dust control.

Transportation (e.g., railroad yards, airport, barge docking site): Activities related to airports, railroad yards, barge docking sites, transfer stations, or cleaning or fueling facilities. This sub-category does not include manufacturing or maintenance activities.

Treatment works/septic tanks/other sewage treatment: Activities related to wastewater and sewage treatment operations, including publicly owned treatment works.

Other: Activities which do not fit into any of the above sub-categories.

Unknown: Site activities are unknown based on available site documentation.

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Appendix C
Definitions of Potentially Vulnerable Environments
(To be Used in Responding to Question 7.1)

100-year Floodplain: Any area that is subject to a one percent or greater chance of flooding in any given year from any source. For riverine systems, both the floodway and the floodway fringe are included in the 100-year floodplain.

Karst Terrain: Area where karst topography, with its characteristic surface and subterranean features, is developed as a result of dissolution of limestone, dolomite or other soluble rock. Characteristic physiographic features present in karst terrain include, but are not limited to, sinkholes, sinking streams, caves, large springs, and blind alleys.

Seismic Impact Area: Area where the probability is greater than or equal to 10 percent that the maximum horizontal acceleration in firm ground or rock at a particular site will equal or exceed 0.10 g (expressed as a percentage of the earth's gravitational pull (g)), within a time period of 250 years. Horizontal ground acceleration is defined as maximum change in velocity over time relative to horizontal movement of the earth's surface as measured at a particular point during an earthquake. This parameter is used to calculate the acceleration values for any particular area and is derived from equations relating to the area's geology and its past seismicity.

Unstable Terrain: Area capable of impairing the integrity of an engineered structure as a result of natural events or human activities. Relevant natural events include, but are not limited to, localized ground subsidence; differential settling, collapse and slope failure; sinkhole formation in karst terrains; liquefaction; and hydrocompaction. Relevant human activities include, but are not limited to, construction operations; flood controls; ground water pumping, injection, and withdrawal; resource extraction; storm water drainage; and seepage from human-made water reservoirs.

Vulnerable Ground Water (Class I Ground Water): Ground water that is highly vulnerable to contamination and are either (1) irreplaceable as a source of drinking water to a substantial population or (2) ecologically vital.

Wellhead Protection Area: Area designated by the states to protect wells in recharge areas of public drinking water supplies, under authority of Section 1428 of the Safe Drinking Water Act.

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Appendix D
Additional Comments

Use this space to further clarify or explain responses to questions in the NPL Data Collection Form. When clarifying or explaining a response, please *make sure to provide the question number*. Attach additional sheets if necessary.

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HRS DOCUMENTATION RECORD COVER SHEET

Name of Site: Booker Landfill

EPA ID No.:
TXN000605565

Contact Persons

Site Investigation: Michelle Brown 469-374-7700
(name/affiliation)

Documentation Record: - -
(name/affiliation)

Pathways, Components, or Threats Not Scored

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HRS DOCUMENTATION RECORD

Name of Site: Booker Landfill

EPA Region: 6

Date Prepared: 1/21/2004

Street Address of Site: 1400 W. Tidwell Road

City, County, State: Houston, Harris, TX

General Location in the State: southeast section of state, on north side of the city of Houston

Topographic Map:

Latitude: (North)
29.85

Longitude: (West)
95.43

Ref: 4, 5

Scores	
Air Pathway	5.47
Ground Water Pathway	0.00
Soil Exposure Pathway	0.11
Surface Water Pathway	0.00
HRS SITE SCORE	2.74

WORKSHEET FOR COMPUTING HRS SITE SCORE

		<u>S</u>	<u>S²</u>
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	<u>0.00</u>	<u>0.00</u>
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	<u>0.00</u>	
2b.	Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	<u>0.00</u>	
2c.	Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	<u>0.00</u>	<u>0.00</u>
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	<u>0.11</u>	<u>0.01</u>
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	<u>5.47</u>	<u>29.92</u>
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		<u>29.93</u>
6.	HRS Site Score Divide the value on line 5 by 4 and take the square root	<u>2.74</u>	

Draft: 6/1/99

SITE DESCRIPTION

See PA/SI report. Section 2.2

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Draft: 6/1/99

(INSERT SITE LAYOUT/LOCATION MAP)

See PA/SI report. Figures 2-1, 2-2, 2-3

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Draft: 6/1/99

REFERENCES

Reference Number	Description of the Reference
1	U.S. Environmental Protection Agency (EPA). Technical Direction Document (TDD) 06-03-09-0004 and Amendments.
2	EPA. Final Rule, Hazard Ranking System. <u>Federal Register</u> . FR51532-51667. 14 December 1990.
3	Quality Assurance Sampling Plan. Booker Landfill Site, Houston, Harris County, Texas. Weston Solutions, Inc. October 2003.
4	U.S. Geological Survey 1.7 Minute Quadrangles Topographic Map Series. Houston Heights, Texas, 1982, Aldine, Texas, 1982, Hedwig Village, 1982 and Settegast, Texas, 1982.
5	WESTON (Weston Solutions, Inc.). Site Assessment Logbook for the Booker Landfill Site, Houston, Harris County, Texas. October 2003. (Provided as Appendix B.)
6	Quantum Environmental Consultants, Inc. Limited Environmental Site Assessment, Quantum Project No. H03004. 8 April 2003.
7	Photo Log. Booker Landfill Site, Houston, Harris County Texas.
8	City of Houston Health and Human Services Environmental Health Division of Public Health Engineering. Booker Landfill Sample Results. 20 May 2003, 25 June 2003, and 31 July 2003
9	Contract Laboratory Data Packages. A4 Scientific and Chemtech. Booker Landfill Site, Houston, Harris County, Texas. Case No. 32306. December 2003.
10	Bureau of Economic Geology at The University of Texas at Austin. <u>Geologic Atlas of Texas</u> , Houston Sheet. 1982
11	City of Houston Department of Public Works and Engineering. Houston, Harris County, Texas. Water Quality Report. 2002.
12	Texas Water Development Board. Well Information/Ground Water Data website. http://www.twdb.state.tx.us/data/waterwell/well_info.html

13	National Flood Insurance Program, FIRM Flood Insurance Rate Map. Harris County, Texas and Incorporated Areas, Panel 660 of 1135. Map Number 48201C0660 K. Map Revised: 20 April 2000.
14	U.S. Department of Commerce. <u>Rainfall Frequency Atlas of the United States</u> . Prepared by David M. Hershfield, Weather Bureau. Technical Paper No. 40. May 1961.
15	U. S. Fish and Wildlife Service. Basic Wetlands Mapper. https://mapper.tat.fws.gov .
16	Texas Parks and Wildlife. Annotated County Lists of Rare Species, Harris County, Texas. Last Revision: 29 October 2003.
17	U.S. Department of Agriculture, Soil Conservation Service. Texas Agricultural Experiment Station and the Harris County Flood Control District. Soil Survey of Harris County, Texas. August 1976.
18	MABLE/Geocorr Geographic Correspondence Engine Version 3.01. Estimated Population in the region of the Booker Landfill site extracted from Census 2000 data. http://www.oseda.missouri.edu/plue/geocorr/
19	U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Historical weather and rainfall data: <u>Climatic Atlas of the United States</u> . 1993. www.worldclimate.com ; www.wxresearch.com/rainfreq.htm .

TABLE 3-1 --GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Aquifer Evaluated: Chicot Aquifer		
Likelihood of Release to an Aquifer:		
1. Observed Release	550	0.00
2. Potential to Release:		
2a. Containment	10	10.00
2b. Net Precipitation	10	3.00
2c. Depth to Aquifer	5	3.00
2d. Travel Time	35	1.00
2e. Potential to Release [(lines 2a(2b + 2c + 2d)]	500	70.00
3. Likelihood of Release (higher of lines 1 and 2e)	550	70.00
Waste Characteristics:		
4. Toxicity/Mobility	(a)	100.00
5. Hazardous Waste Quantity	(a)	100.00
6. Waste Characteristics	100	10.00
Targets:		
7. Nearest Well	(b)	0.00
8. Population:		
8a. Level I Concentrations	(b)	0.00
8b. Level II Concentrations	(b)	0.00
8c. Potential Contamination	(b)	0.00
8d. Population (lines 8a + 8b + 8c)	(b)	0.00
9. Resources	5	0.00
10. Wellhead Protection Area	20	0.00
11. Targets (lines 7 + 8d + 9 + 10)	(b)	0.00
Ground Water Migration Score for an Aquifer:		
12. Aquifer Score [(lines 3 x 6 x 11)/82,5000] ^c	100	0.00
Ground Water Migration Pathway Score:		
13. Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evaluated) ^c	100	0.00

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c Do not round to nearest integer

TABLE 3-1 --GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Aquifer Evaluated: Evangeline Aquifer		
Likelihood of Release to an Aquifer:		
1. Observed Release	550	0.00
2. Potential to Release:		
2a. Containment	10	10.00
2b. Net Precipitation	10	3.00
2c. Depth to Aquifer	5	1.00
2d. Travel Time	35	1.00
2e. Potential to Release [(lines 2a(2b + 2c + 2d)]	500	50.00
3. Likelihood of Release (higher of lines 1 and 2e)	550	50.00
Waste Characteristics:		
4. Toxicity/Mobility	(a)	100.00
5. Hazardous Waste Quantity	(a)	100.00
6. Waste Characteristics	100	10.00
Targets:		
7. Nearest Well	(b)	0.00
8. Population:		
8a. Level I Concentrations	(b)	0.00
8b. Level II Concentrations	(b)	0.00
8c. Potential Contamination	(b)	0.00
8d. Population (lines 8a + 8b + 8c)	(b)	0.00
9. Resources	5	0.00
10. Wellhead Protection Area	20	0.00
11. Targets (lines 7 + 8d + 9 + 10)	(b)	0.00
Ground Water Migration Score for an Aquifer:		
12. Aquifer Score [(lines 3 x 6 x 11)/82,5000] ^c	100	0.00
Ground Water Migration Pathway Score:		
13. Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evaluated) ^c	100	0.00

^a Maximum value applies to waste characteristics category^b Maximum value not applicable^c Do not round to nearest integer

TABLE 4-1 –SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Watershed Evaluated: Buffalo-San Jacinto		
Drinking Water Threat		
Likelihood of Release:		
1. Observed Release	550	0.00
2. Potential to Release by Overland Flow:		
2a. Containment	10	10.00
2b. Runoff	25	1.00
2c. Distance to Surface Water	25	6.00
2d. Potential to Release by Overland Flow [(lines 2a(2b + 2c)]	500	70.00
3. Potential to Release by Flood:		
3a. Containment (Flood)	10	10.00
3b. Flood Frequency	50	7.00
3c. Potential to Release by Flood (lines 3a x 3b)	500	70.00
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	140.00
5. Likelihood of Release (higher of lines 1 and 4)	550	140.00
Waste Characteristics:		
6. Toxicity/Persistence	(a)	10,000.00
7. Hazardous Waste Quantity	(a)	100.00
8. Waste Characteristics	100	32.00
Targets:		
9. Nearest Intake	50	0.00
10. Population:		
10a. Level I Concentrations	(b)	0.00
10b. Level II Concentrations	(b)	0.00
10c. Potential Contamination	(b)	0.00
10d. Population (lines 10a + 10b + 10c)	(b)	0.00
11. Resources	5	0.00
12. Targets (lines 9 + 10d + 11)	(b)	0.00
Drinking Water Threat Score:		
13. Drinking Water Threat Score [(lines 5x8x12)/82,500, subject to a max of 100]	100	0.00
Human Food Chain Threat		
Likelihood of Release:		
14. Likelihood of Release (same value as line 5)	550	140.00
Waste Characteristics:		
15. Toxicity/Persistence/Bioaccumulation	(a)	5.00E+8
16. Hazardous Waste Quantity	(a)	100.00
17. Waste Characteristics	1000	320.00
Targets:		
18. Food Chain Individual	50	0.00
19. Population		
19a. Level I Concentration	(b)	0.00
19b. Level II Concentration	(b)	0.00
19c. Potential Human Food Chain Contamination	(b)	0.00
19d. Population (lines 19a + 19b + 19c)	(b)	0.00
20. Targets (lines 18 + 19d)	(b)	0.00
Human Food Chain Threat Score:		
21. Human Food Chain Threat Score [(lines 14x17x20)/82500, subject to max of 100]	100	0.00
Environmental Threat		

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Likelihood of Release:

22. Likelihood of Release (same value as line 5)	550	140.00
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Waste Characteristics:

23. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	5.00E+8	
24. Hazardous Waste Quantity	(a)	100.00	
25. Waste Characteristics	1000		320.00

Targets:

26. Sensitive Environments			
26a. Level I Concentrations	(b)	0.00	
26b. Level II Concentrations	(b)	0.00	
26c. Potential Contamination	(b)	0.00	
26d. Sensitive Environments (lines 26a + 26b + 26c)	(b)	0.00	
27. Targets (value from line 26d)	(b)		0.00

Environmental Threat Score:

28. Environmental Threat Score [(lines 22x25x27)/82,500 subject to a max of 60]	60	0.00
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Surface Water Overland/Flood Migration Component Score for a Watershed

29. Watershed Score ^c (lines 13+21+28, subject to a max of 100)	100	0.00
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Surface Water Overland/Flood Migration Component Score

30. Component Score (S_{sw}) ^c (highest score from line 29 for all watersheds evaluated)	100	0.00
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^a Maximum value applies to waste characteristics category^b Maximum value not applicable^c Do not round to nearest integer

TABLE 5-1 --SOIL EXPOSURE PATHWAY SCORESHEET			
Factor categories and factors	Maximum Value	Value Assigned	
Likelihood of Exposure:			
1. Likelihood of Exposure	550		0.00
Waste Characteristics:			
2. Toxicity	(a)	0.00	
3. Hazardous Waste Quantity	(a)	0.00	
4. Waste Characteristics	100		0.00
Targets:			
5. Resident Individual	50	0.00	
6. Resident Population:			
6a. Level I Concentrations	(b)	0.00	
6b. Level II Concentrations	(b)	0.00	
6c. Population (lines 6a + 6b)	(b)	0.00	
7. Workers	15	0.00	
8. Resources	5	0.00	
9. Terrestrial Sensitive Environments	(c)	0.00	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	(b)		0.00
Resident Population Threat Score			
11. Resident Population Threat Score (lines 1 x 4 x 10)	(b)		0.00
Nearby Population Threat			
Likelihood of Exposure:			
12. Attractiveness/Accessibility	100	50.00	
13. Area of Contamination	100	100.00	
14. Likelihood of Exposure	500		375.00
Waste Characteristics:			
15. Toxicity	(a)	10.00	
16. Hazardous Waste Quantity	(a)	10.00	
17. Waste Characteristics	100		3.00
Targets:			
18. Nearby Individual	1	1.00	
19. Population Within 1 Mile	(b)	7.00	
20. Targets (lines 18 + 19)	(b)		8.00
Nearby Population Threat Score			
21. Nearby Population Threat (lines 14 x 17 x 20)	(b)		9,000.00
Soil Exposure Pathway Score:			
22. Pathway Score ^d (S _s), [(lines (11+21)/82,500, subject to max of 100]	100		0.11

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited to a maximum of 60

^d Do not round to nearest integer

TABLE 6-1 – AIR MIGRATION PATHWAY SCORESHEET		
Factor categories and factors	Maximum Value	Value Assigned
Likelihood of Release:		
1. Observed Release	550	0.00
2. Potential to Release:		
2a. Gas Potential to Release	500	280.00
2b. Particulate Potential to Release	500	330.00
2c. Potential to Release (higher of lines 2a and 2b)	500	330.00
3. Likelihood of Release (higher of lines 1 and 2c)	550	330.00
Waste Characteristics:		
4. Toxicity/Mobility	(a)	2,000.00
5. Hazardous Waste Quantity	(a)	100.00
6. Waste Characteristics	100	18.00
Targets:		
7. Nearest Individual	50	0.00
8. Population:		
8a. Level I Concentrations	(b)	0.00
8b. Level II Concentrations	(b)	0.00
8c. Potential Contamination	(b)	76.00
8d. Population (lines 8a + 8b + 8c)	(b)	76.00
9. Resources	5	0.00
10. Sensitive Environments:		
10a. Actual Contamination	(c)	0.00
10b. Potential Contamination	(c)	0.00
10c. Sensitive Environments (lines 10a + 10b)	(c)	0.00
11. Targets (lines 7 + 8d + 9 + 10c)	(b)	76.00
Air Migration Pathway Score:		
12. Pathway Score (S_a) [(lines 3 x 6 x 11)/82,500] ^d	100	5.47

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.

^d Do not round to nearest integer

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Booker Landfill

Number of source: 1

Source Type: Landfill

Description and Location of Source (with reference to a map of the site):

-See PA/SI report. Section 3 and Figure 2-2.

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2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Background Concentrations *[if necessary]*:

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample Quantitation Limit	Reference
(b) (6)	Sample	10/28/2003	Aluminum	4,170.00 mg/kg	40.00	9
	Sample	10/28/2003	Arsenic	4.70 Jv mg/kg	2.00	9
	Sample	10/28/2003	Barium	107.00 mg/kg	40.00	9
	Sample	10/28/2003	Beryllium	0.49 L mg/kg	1.00	9
	Sample	10/28/2003	Calcium	30,400.00 mg/kg	1,000.00	9
	Sample	10/28/2003	Chromium	5.70 Jv mg/kg	2.00	9
	Sample	10/28/2003	Cobalt	4.50 L mg/kg	10.00	9
	Sample	10/28/2003	Copper	12.10 Jv mg/kg	5.00	9
	Sample	10/28/2003	Iron	5,980.00 mg/kg	20.00	9
	Sample	10/28/2003	Lead	26.10	0.60	9

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(b) (6)

			mg/kg		
Sample	10/28/2003	Magnesium	1,940.00	1,000.00	9
			mg/kg		
Sample	10/28/2003	Manganese	291.00	3.00	9
			mg/kg		
Sample	10/28/2003	Methylene chloride	3.00 LJ	10.00	9
			ug/kg		
Sample	10/28/2003	Nickel	7.80 LJv	8.00	9
			mg/kg		
Sample	10/28/2003	Potassium	501.00 L	1,000.00	9
			mg/kg		
Sample	10/28/2003	Sodium	132.00 L	1,000.00	9
			mg/kg		
Sample	10/28/2003	Vanadium	15.50	10.00	9
			mg/kg		
Sample	10/28/2003	Zinc	50.30	4.00	9
			mg/kg		
Sample	10/28/2003	Acetone	14.00	10.00	9
			ug/kg		
Sample	10/28/2003	Acetophenone	43.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Aluminum	1,380.00	40.00	9
			mg/kg		
Sample	10/28/2003	Arsenic	3.90 Jv	2.00	9
			mg/kg		
Sample	10/28/2003	Barium	38.60 L	40.00	9
			mg/kg		
Sample	10/28/2003	Benz(a)anthracene	110.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Benzo(a)pyrene	120.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Benzo(b)fluoranthene	100.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Benzo(g,h,i)perylene	65.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Benzo(k)fluoranthene	120.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Beryllium	0.16 L	1.00	9
			mg/kg		
Sample	10/28/2003	Bis (2-ethylhexyl) phthalate	170.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Butylbenzyl phthalate	64.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Calcium	16,100.00	1,000.00	9
			mg/kg		

Source Characterization

(b) (6)

Sample	10/28/2003	Chromium	57.00 Jv mg/kg	2.00	9
Sample	10/28/2003	Chrysene	130.00 LJ ug/kg	340.00	9
Sample	10/28/2003	Cobalt	2.10 L mg/kg	10.00	9
Sample	10/28/2003	Copper	12.60 Jv mg/kg	5.00	9
Sample	10/28/2003	Fluoranthene	220.00 LJ ug/kg	340.00	9
Sample	10/28/2003	Indeno(1,2,3-cd)pyrene	80.00 LJ ug/kg	340.00	9
Sample	10/28/2003	Iron	2,450.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	69.00 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	456.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	64.90 mg/kg	3.00	9
Sample	10/28/2003	Nickel	22.40 Jv mg/kg	8.00	9
Sample	10/28/2003	Phenanthrene	88.00 LJ ug/kg	340.00	9
Sample	10/28/2003	Potassium	81.90 L mg/kg	1,000.00	9
Sample	10/28/2003	Pyrene	170.00 LJ ug/kg	340.00	9
Sample	10/28/2003	Vanadium	6.10 L mg/kg	10.00	9
Sample	10/28/2003	Zinc	51.20 mg/kg	4.00	9
Sample	10/28/2003	Aluminum	1,090.00 mg/kg	40.00	9
Sample	10/28/2003	Antimony	2.90 L mg/kg	12.00	9
Sample	10/28/2003	Arsenic	43.00 Jv mg/kg	2.00	9
Sample	10/28/2003	Barium	64.90 mg/kg	40.00	9
Sample	10/28/2003	Benzo(a)pyrene	40.00 LJ ug/kg	350.00	9
Sample	10/28/2003	Benzo(b)fluoranthene	40.00 LJ ug/kg	350.00	9
Sample	10/28/2003	Benzo(k)fluoranthene	40.00 LJ	350.00	9

Source Characterization

(b) (6)

			ug/kg		
Sample	10/28/2003	Beryllium	0.20 L mg/kg	1.00	9
Sample	10/28/2003	Bis (2-ethylhexyl) phthalate	160.00 LJ ug/kg	350.00	9
Sample	10/28/2003	Butylbenzyl phthalate	45.00 LJ ug/kg	350.00	9
Sample	10/28/2003	Calcium	28,800.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chromium	122.00 Jv mg/kg	2.00	9
Sample	10/28/2003	Chrysene	48.00 LJ ug/kg	350.00	9
Sample	10/28/2003	Cobalt	4.10 L mg/kg	10.00	9
Sample	10/28/2003	Copper	82.50 Jv mg/kg	5.00	9
Sample	10/28/2003	Fluoranthene	61.00 LJ ug/kg	350.00	9
Sample	10/28/2003	Iron	23,900.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	58.50 ug/kg	0.60	9
Sample	10/28/2003	Magnesium	543.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	122.00 mg/kg	3.00	9
Sample	10/28/2003	Nickel	87.50 Jv mg/kg	8.00	9
Sample	10/28/2003	Potassium	75.10 L mg/kg	1,000.00	9
Sample	10/28/2003	Pyrene	55.00 LJ ug/kg	350.00	9
Sample	10/28/2003	Sodium	230.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	9.50 L mg/kg	10.00	9
Sample	10/28/2003	Zinc	149.00 mg/kg	4.00	9

- Source Samples:

Source Characterization

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample Quantitation Limit	Reference
(b) (6)	Sample	10/27/2003	Acetone	170.00 J ug/kg	10.00	9
	Sample	10/27/2003	Aluminum	2,040.00 mg/kg	40.00	9
	Sample	10/27/2003	Arsenic	6.80 Jv mg/kg	2.00	9
	Sample	10/27/2003	Barium	92.90 mg/kg	40.00	9
	Sample	10/27/2003	Beryllium	0.33 L mg/kg	1.00	9
	Sample	10/27/2003	Calcium	3,930.00 mg/kg	1,000.00	9
	Sample	10/27/2003	Chromium	24.50 Jv mg/kg	2.00	9
	Sample	10/27/2003	Cobalt	6.30 L mg/kg	10.00	9
	Sample	10/27/2003	Copper	185.00 Jv mg/kg	5.00	9
	Sample	10/27/2003	Iron	32,100.00 mg/kg	20.00	9
	Sample	10/27/2003	Lead	44.00 mg/kg	0.60	9
	Sample	10/27/2003	Magnesium	674.00 L mg/kg	1,000.00	9
	Sample	10/27/2003	Methyl ethyl ketone	18.00 J ug/kg	10.00	9
	Sample	10/27/2003	Nickel	62.70 Jv mg/kg	8.00	9
	Sample	10/27/2003	Potassium	199.00 L mg/kg	1,000.00	9
	Sample	10/27/2003	Selenium	1.10 LJ mg/kg	1.00	9
	Sample	10/27/2003	Vanadium	9.00 L mg/kg	10.00	9
	Sample	10/27/2003	Zinc	9.00 L mg/kg	4.00	9
	Sample	10/27/2003	Acetophenone	68.00 LJ ug/kg	450.00	9
	Sample	10/27/2003	Aluminum	3,210.00 mg/kg	40.00	9
	Sample	10/27/2003	Arsenic	4.30 Jv	2.00	9

Source Characterization

(b) (6)

			mg/kg		
Sample	10/27/2003	Barium	292.00	40.00	9
			mg/kg		
Sample	10/27/2003	Beryllium	0.54 L	1.00	9
			mg/kg		
Sample	10/27/2003	Biphenyl, 1,1-	3,400.00 ug/kg	450.00	9
Sample	10/27/2003	Bis (2-ethylhexyl) phthalate	1,100.00 ug/kg	450.00	9
Sample	10/27/2003	Cadmium	0.91 L	1.00	9
			mg/kg		
Sample	10/27/2003	Calcium	16,800.00	1,000.00	9
			mg/kg		
Sample	10/27/2003	Chromium	24.50 Jv	2.00	9
			mg/kg		
Sample	10/27/2003	Cobalt	10.40 L	10.00	9
			mg/kg		
Sample	10/27/2003	Copper	16.50 Jv	5.00	9
			mg/kg		
Sample	10/27/2003	Iron	8,140.00	20.00	9
			mg/kg		
Sample	10/27/2003	Lead	57.70	0.60	9
			mg/kg		
Sample	10/27/2003	Magnesium	1,740.00	1,000.00	9
			mg/kg		
Sample	10/27/2003	Manganese	647.00	3.00	9
			mg/kg		
Sample	10/27/2003	Nickel	8.50 LJv	8.00	9
			mg/kg		
Sample	10/27/2003	Potassium	404.00 L	1,000.00	9
			mg/kg		
Sample	10/27/2003	Sodium	372.00 L	1,000.00	9
			mg/kg		
Sample	10/27/2003	Vanadium	11.90 L	10.00	9
			mg/kg		
Sample	10/27/2003	Zinc	538.00	4.00	9
			mg/kg		
Sample	10/27/2003	Acetophenone	62.00 LJ	350.00	9
			ug/kg		
Sample	10/27/2003	Aluminum	2,020.00	40.00	9
			mg/kg		
Sample	10/27/2003	Arsenic	2.90 Jv	2.00	9
			mg/kg		
Sample	10/27/2003	Barium	165.00	40.00	9
			mg/kg		

Source Characterization

(b) (6)

Sample	10/27/2003	Beryllium	0.24 L mg/kg	1.00	9
Sample	10/27/2003	Bis (2-ethylhexyl) phthalate	420.00 ug/kg	350.00	9
Sample	10/27/2003	Calcium	20,400.00 mg/kg	1,000.00	9
Sample	10/27/2003	Chlordane, gamma-	2.90 LJ ug/kg	18.00	9
Sample	10/27/2003	Chromium	12.60 Jv mg/kg	2.00	9
Sample	10/27/2003	Cobalt	3.90 L mg/kg	10.00	9
Sample	10/27/2003	Copper	19.80 Jv mg/kg	5.00	9
Sample	10/27/2003	Di-n-butyl phthalate	61.00 LJ ug/kg	350.00	9
Sample	10/27/2003	Iron	7,280.00 mg/kg	20.00	9
Sample	10/27/2003	Lead	28.00 mg/kg	0.60	9
Sample	10/27/2003	Magnesium	1,330.00 mg/kg	1,000.00	9
Sample	10/27/2003	Manganese	183.00 mg/kg	3.00	9
Sample	10/27/2003	Nickel	12.70 Jv mg/kg	8.00	9
Sample	10/27/2003	Potassium	405.00 L mg/kg	1,000.00	9
Sample	10/27/2003	Sodium	214.00 L mg/kg	1,000.00	9
Sample	10/27/2003	Vanadium	8.80 L mg/kg	10.00	9
Sample	10/27/2003	Zinc	114.00 mg/kg	4.00	9
Sample	10/27/2003	Aluminum	1,390.00 mg/kg	40.00	9
Sample	10/27/2003	Arsenic	1.40 LJv mg/kg	2.00	9
Sample	10/27/2003	Barium	165.00 mg/kg	40.00	9
Sample	10/27/2003	Beryllium	0.18 L mg/kg	1.00	9
Sample	10/27/2003	Bis (2-ethylhexyl) phthalate	440.00 ug/kg	340.00	9
Sample	10/27/2003	Cadmium	0.17 L	1.00	9

Source Characterization

(b) (6)

				mg/kg		
Sample	10/27/2003	Calcium	2,550.00	mg/kg	1,000.00	9
Sample	10/27/2003	Chromium	3.90 Jv	mg/kg	2.00	9
Sample	10/27/2003	Cobalt	1.30 L	mg/kg	10.00	9
Sample	10/27/2003	Copper	23.50 Jv	mg/kg	5.00	9
Sample	10/27/2003	Iron	2,110.00	mg/kg	20.00	9
Sample	10/27/2003	Lead	22.30	mg/kg	0.60	9
Sample	10/27/2003	Magnesium	371.00 L	mg/kg	1,000.00	9
Sample	10/27/2003	Manganese	71.60	mg/kg	3.00	9
Sample	10/27/2003	Nickel	3.00 LJv	mg/kg	8.00	9
Sample	10/27/2003	Potassium	176.00 L	mg/kg	1,000.00	9
Sample	10/27/2003	Sodium	112.00 L	mg/kg	1,000.00	9
Sample	10/27/2003	Vanadium	6.90 L	mg/kg	10.00	9
Sample	10/27/2003	Zinc	55.80	mg/kg	4.00	9
Sample	10/27/2003	Aluminum	1,470.00	mg/kg	40.00	9
Sample	10/27/2003	Arsenic	1.80 LJv	mg/kg	2.00	9
Sample	10/27/2003	Barium	63.90	mg/kg	40.00	9
Sample	10/27/2003	Beryllium	0.23 L	mg/kg	1.00	9
Sample	10/27/2003	Bis (2-ethylhexyl) phthalate	100.00 LJ	ug/kg	350.00	9
Sample	10/27/2003	Calcium	3,220.00	mg/kg	1,000.00	9
Sample	10/27/2003	Chromium	3.20 Jv	mg/kg	2.00	9
Sample	10/27/2003	Cobalt	1.60 L	mg/kg	10.00	9
Sample	10/27/2003	Copper	6.80 Jv	mg/kg	5.00	9

Source Characterization

(b) (6)

Sample	10/27/2003	Iron	2,460.00 mg/kg	20.00	9
Sample	10/27/2003	Lead	28.40 mg/kg	0.60	9
Sample	10/27/2003	Magnesium	512.00 L mg/kg	1,000.00	9
Sample	10/27/2003	Manganese	85.70 mg/kg	3.00	9
Sample	10/27/2003	Nickel	6.30 LJv mg/kg	8.00	9
Sample	10/27/2003	Potassium	248.00 L mg/kg	1,000.00	9
Sample	10/27/2003	Vanadium	14.90 mg/kg	10.00	9
Sample	10/27/2003	Zinc	99.30 mg/kg	4.00	9
Sample	10/28/2003	Aluminum	1,860.00 mg/kg	40.00	9
Sample	10/28/2003	Barium	83.10 mg/kg	40.00	9
Sample	10/28/2003	Beryllium	0.30 L mg/kg	1.00	9
Sample	10/28/2003	Bis (2-ethylhexyl) phthalate	520.00 mg/kg	350.00	9
Sample	10/28/2003	Calcium	7,620.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chromium	3.50 Jv mg/kg	2.00	9
Sample	10/28/2003	Cobalt	2.00 L mg/kg	10.00	9
Sample	10/28/2003	Copper	13.30 Jv mg/kg	5.00	9
Sample	10/28/2003	Iron	2,970.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	30.60 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	714.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	93.30 mg/kg	3.00	9
Sample	10/28/2003	Methyl ethyl ketone	5.00 LJ mg/kg	10.00	9
Sample	10/28/2003	Nickel	3.80 LJv mg/kg	8.00	9
Sample	10/28/2003	Potassium	289.00 L	1,000.00	9

Source Characterization

(b) (6)

			mg/kg		
Sample	10/28/2003	Sodium	147.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	9.10 L mg/kg	10.00	9
Sample	10/28/2003	Zinc	78.80 mg/kg	4.00	9
Sample	10/28/2003				9
Sample	10/28/2003	Aluminum	3,020.00 mg/kg	40.00	9
Sample	10/28/2003	Arsenic	2.90 Jv mg/kg	2.00	9
Sample	10/28/2003	Barium	127.00 mg/kg	40.00	9
Sample	10/28/2003	Beryllium	0.55 L mg/kg	1.00	9
Sample	10/28/2003	Bis (2-ethylhexyl) phthalate	72.00 LJ mg/kg	360.00	9
Sample	10/28/2003	Calcium	7,570.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chromium	4.30 Jv mg/kg	2.00	9
Sample	10/28/2003	Cobalt	4.90 L mg/kg	10.00	9
Sample	10/28/2003	Copper	5.10 LJv mg/kg	5.00	9
Sample	10/28/2003	Iron	8,190.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	17.00 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	1,310.00 mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	161.00 mg/kg	3.00	9
Sample	10/28/2003	Nickel	7.50 LJv mg/kg	8.00	9
Sample	10/28/2003	Potassium	414.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Sodium	130.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	12.80 mg/kg	10.00	9
Sample	10/28/2003	Zinc	88.10 mg/kg	4.00	9

Source Characterization

(b) (6)

Sample	10/28/2003	Acetone	42.00 B ug/kg	13.00	9
Sample	10/28/2003	Acetophenone	49.00 LJ ug/kg	390.00	9
Sample	10/28/2003	Aluminum	3,030.00 mg/kg	40.00	9
Sample	10/28/2003	Arsenic	4.80 Jv mg/kg	2.00	9
Sample	10/28/2003	Barium	154.00 mg/kg	40.00	9
Sample	10/28/2003	Beryllium	0.61 L mg/kg	1.00	9
Sample	10/28/2003	Bis (2-ethylhexyl) phthalate	220.00 LJ ug/kg	390.00	9
Sample	10/28/2003	Butylbenzyl phthalate	64.00 LJ ug/kg	390.00	9
Sample	10/28/2003	Calcium	8,390.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chromium	12.40 Jv mg/kg	2.00	9
Sample	10/28/2003	Chrysene	52.00 LJ ug/kg	390.00	9
Sample	10/28/2003	Cobalt	6.60 L mg/kg	10.00	9
Sample	10/28/2003	Copper	29.40 Jv mg/kg	5.00	9
Sample	10/28/2003	Fluoranthene	76.00 LJ ug/kg	390.00	9
Sample	10/28/2003	Iron	13,000.00 mg/kg	1,000.00	9
Sample	10/28/2003	Lead	20.40 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	1,460.00 mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	167.00 mg/kg	3.00	9
Sample	10/28/2003	Mercury	0.10 LJv mg/kg	0.10	9
Sample	10/28/2003	Methyl ethyl ketone	6.00 LJ ug/kg	13.00	9
Sample	10/28/2003	Nickel	14.80 Jv mg/kg	8.00	9
Sample	10/28/2003	Nitrosodiphenylamine, N-	46.00 LJ ug/kg	390.00	9
Sample	10/28/2003	Potassium	587.00 L	1,000.00	9

Source Characterization

(b) (6)

			mg/kg		
Sample	10/28/2003	Pyrene	54.00 LJ ug/kg	390.00	9
Sample	10/28/2003	Vanadium	16.00 mg/kg	10.00	9
Sample	10/28/2003	Zinc	146.00 mg/kg	4.00	9
Sample	10/28/2003	Aluminum	3,600.00 mg/kg	1,000.00	9
Sample	10/28/2003	Arsenic	3.10 Jv mg/kg	2.00	9
Sample	10/28/2003	Barium	158.00 mg/kg	40.00	9
Sample	10/28/2003	Beryllium	0.66 L mg/kg	1.00	9
Sample	10/28/2003	Bis (2-ethylhexyl) phthalate	140.00 LJ ug/kg	370.00	9
Sample	10/28/2003	Butylbenzyl phthalate	69.00 LJ ug/kg	370.00	9
Sample	10/28/2003	Cadmium	0.63 L mg/kg	1.00	9
Sample	10/28/2003	Calcium	11,900.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chromium	5.60 Jv mg/kg	2.00	9
Sample	10/28/2003	Cobalt	5.90 L mg/kg	10.00	9
Sample	10/28/2003	Copper	10.30 Jv mg/kg	5.00	9
Sample	10/28/2003	Iron	7,390.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	21.00 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	1,700.00 mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	176.00 mg/kg	3.00	9
Sample	10/28/2003	Nickel	19.40 Jv mg/kg	8.00	9
Sample	10/28/2003	Potassium	631.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Sodium	126.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	15.00 mg/kg	10.00	9

Source Characterization

(b) (6)

Sample	10/28/2003	Zinc	146.00 mg/kg	4.00	9
Sample	10/28/2003	Aluminum	4,020.00 mg/kg	40.00	9
Sample	10/28/2003	Arsenic	2.80 LJv mg/kg	2.00	9
Sample	10/28/2003	Barium	105.00 mg/kg	40.00	9
Sample	10/28/2003	Beryllium	0.67 L mg/kg	1.00	9
Sample	10/28/2003	Calcium	8,040.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chromium	5.20 Jv mg/kg	2.00	9
Sample	10/28/2003	Copper	7.20 LJv mg/kg	5.00	9
Sample	10/28/2003	Iron	5,840.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	10.60 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	1,550.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	98.90 mg/kg	3.00	9
Sample	10/28/2003	Methyl ethyl ketone	11.00 LJ ug/kg	37.00	9
Sample	10/28/2003	Nickel	4.60 LJv mg/kg	8.00	9
Sample	10/28/2003	Potassium	318.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Sodium	636.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	18.70 L mg/kg	10.00	9
Sample	10/28/2003	Zinc	24.90 mg/kg	4.00	9
Sample	10/28/2003	Aluminum	2,020.00 mg/kg	40.00	9
Sample	10/28/2003	Arsenic	2.20 LJv mg/kg	2.00	9
Sample	10/28/2003	Barium	117.00 mg/kg	40.00	9
Sample	10/28/2003	Beryllium	0.45 L mg/kg	1.00	9
Sample	10/28/2003	Calcium	7,210.00	1,000.00	9

Source Characterization

(b) (6)

			mg/kg		
Sample	10/28/2003	Chromium	2.80 Jv mg/kg	2.00	9
Sample	10/28/2003	Cobalt	4.60 L mg/kg	10.00	9
Sample	10/28/2003	Copper	7.80 Jv mg/kg	5.00	9
Sample	10/28/2003	Iron	4,560.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	8.40 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	916.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	92.30 mg/kg	3.00	9
Sample	10/28/2003	Nickel	4.10 LJv mg/kg	8.00	9
Sample	10/28/2003	Potassium	184.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Sodium	186.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	9.30 L mg/kg	10.00	9
Sample	10/28/2003	Zinc	44.70 mg/kg	4.00	9
Sample	10/28/2003	Acetone	90.00 ug/kg	13.00	9
Sample	10/28/2003	Aluminum	2,730.00 mg/kg	40.00	9
Sample	10/28/2003	Arsenic	2.00 LJv mg/kg	2.00	9
Sample	10/28/2003	Barium	172.00 mg/kg	40.00	9
Sample	10/28/2003	Beryllium	0.38 L mg/kg	1.00	9
Sample	10/28/2003	Bis (2-ethylhexyl) phthalate	320.00 LJ ug/kg	400.00	9
Sample	10/28/2003	Butylbenzyl phthalate	58.00 LJ ug/kg	400.00	9
Sample	10/28/2003	Cadmium	0.62 L mg/kg	1.00	9
Sample	10/28/2003	Calcium	15,800.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chromium	4.50 Jv mg/kg	2.00	9

Source Characterization

(b) (6)

Sample	10/28/2003	Cobalt	4.30 L mg/kg	10.00	9
Sample	10/28/2003	Copper	12.70 Jv mg/kg	5.00	9
Sample	10/28/2003	Fluoranthene	47.00 LJ ug/kg	400.00	9
Sample	10/28/2003	Iron	4,050.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	25.70 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	1,260.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	264.00 mg/kg	3.00	9
Sample	10/28/2003	Methyl ethyl ketone	6.00 LJ ug/kg	13.00	9
Sample	10/28/2003	Nickel	5.20 LJv mg/kg	8.00	9
Sample	10/28/2003	Potassium	467.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Pyrene	41.00 LJ ug/kg	400.00	9
Sample	10/28/2003	Sodium	147.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	10.80 L mg/kg	10.00	9
Sample	10/28/2003	Zinc	141.00 mg/kg	4.00	9
Sample	10/28/2003	Aluminum	2,060.00 mg/kg	40.00	9
Sample	10/28/2003	Arsenic	1.50 LJv mg/kg	2.00	9
Sample	10/28/2003	Barium	59.50 mg/kg	40.00	9
Sample	10/28/2003	Beryllium	0.27 L mg/kg	1.00	9
Sample	10/28/2003	Calcium	4,020.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chromium	4.80 Jv mg/kg	2.00	9
Sample	10/28/2003	Cobalt	1.80 L mg/kg	10.00	9
Sample	10/28/2003	Copper	2.60 LJv mg/kg	5.00	9
Sample	10/28/2003	Iron	3,120.00	20.00	9

Source Characterization

(b) (6)

			mg/kg		
Sample	10/28/2003	Lead	6.30	0.60	9
			mg/kg		
Sample	10/28/2003	Magnesium	501.00 L	1,000.00	9
			mg/kg		
Sample	10/28/2003	Manganese	45.30	3.00	9
			mg/kg		
Sample	10/28/2003	Nickel	2.40 LJv	8.00	9
			mg/kg		
Sample	10/28/2003	Potassium	100.00 L	1,000.00	9
			mg/kg		
Sample	10/28/2003	Sodium	126.00 L	1,000.00	9
			mg/kg		
Sample	10/28/2003	Vanadium	9.00 L	10.00	9
			mg/kg		
Sample	10/28/2003	Zinc	6.90	4.00	9
			mg/kg		
Sample	10/28/2003	Acetone	1,800.00 D	5.00	9
			ug/kg		
Sample	10/28/2003	Aluminum	3,140.00	40.00	9
			mg/kg		
Sample	10/28/2003	Arsenic	3.90 Jv	2.00	9
			mg/kg		
Sample	10/28/2003	Barium	123.00	40.00	9
			mg/kg		
Sample	10/28/2003	Beryllium	0.47 L	1.00	9
			mg/kg		
Sample	10/28/2003	Calcium	6,500.00	1,000.00	9
			mg/kg		
Sample	10/28/2003	Chromium	5.70 Jv	2.00	9
			mg/kg		
Sample	10/28/2003	Cobalt	6.00 L	10.00	9
			mg/kg		
Sample	10/28/2003	Copper	3.70 LJv	5.00	9
			mg/kg		
Sample	10/28/2003	Iron	4,700.00	20.00	9
			mg/kg		
Sample	10/28/2003	Lead	12.50	0.60	9
			mg/kg		
Sample	10/28/2003	Magnesium	768.00 L	1,000.00	9
			mg/kg		
Sample	10/28/2003	Manganese	412.00	3.00	9
			mg/kg		
Sample	10/28/2003	Methyl ethyl ketone	38.00 ug/kg	5.00	9

Source Characterization

(b) (6)

Sample	10/28/2003	Nickel	4.10 LJv mg/kg		9
Sample	10/28/2003	Potassium	183.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Sodium	152.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	14.40 mg/kg	10.00	9
Sample	10/28/2003	Zinc	13.30 mg/kg	4.00	9
Sample	10/28/2003	Acetone	990.00 LJ mg/kg		9
Sample	10/28/2003	Aluminum	3,270.00 mg/kg	40.00	9
Sample	10/28/2003	Arsenic	4.50 Jv mg/kg	2.00	9
Sample	10/28/2003	Barium	80.00 mg/kg	40.00	9
Sample	10/28/2003	Beryllium	0.49 L mg/kg	1.00	9
Sample	10/28/2003	Calcium	15,800.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chromium	5.60 Lv mg/kg	2.00	9
Sample	10/28/2003	Cobalt	3.60 L mg/kg	10.00	9
Sample	10/28/2003	Copper	4.20 LJv mg/kg	5.00	9
Sample	10/28/2003	Iron	5,680.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	11.80 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	857.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	222.00 mg/kg	3.00	9
Sample	10/28/2003	Nickel	4.50 LJv mg/kg	8.00	9
Sample	10/28/2003	Potassium	215.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Sodium	152.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	14.00 mg/kg	10.00	9
Sample	10/28/2003	Zinc	13.80	4.00	9

Source Characterization

(b) (6)

			mg/kg		
Sample	10/28/2003	Aluminum	2,230.00	40.00	9
			mg/kg		
Sample	10/28/2003	Arsenic	2.30 LJv	2.00	9
			mg/kg		
Sample	10/28/2003	Barium	57.90	40.00	9
			mg/kg		
Sample	10/28/2003	Benz(a)anthracene	120.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Benzo(a)pyrene	120.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Benzo(b)fluoranthene	130.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Benzo(g,h,i)perylene	85.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Benzo(k)fluoranthene	110.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Beryllium	0.41 L	1.00	9
			mg/kg		
Sample	10/28/2003	Calcium	36,200.00	1,000.00	9
			mg/kg		
Sample	10/28/2003	Chromium	4.80 Jv	2.00	9
			mg/kg		
Sample	10/28/2003	Chrysene	140.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Cobalt	3.50 L	10.00	9
			mg/kg		
Sample	10/28/2003	Copper	5.10 LJv	5.00	9
			ug/kg		
Sample	10/28/2003	Fluoranthene	250.00 LJ	340.00	9
			ug/kg		
Sample	10/28/2003	Iron	4,910.00		9
			mg/kg		
Sample	10/28/2003	Lead	14.20	0.60	9
			mg/kg		
Sample	10/28/2003	Magnesium	834.00 L	1,000.00	9
			mg/kg		
Sample	10/28/2003	Manganese	88.80	3.00	9
			mg/kg		
Sample	10/28/2003	Methylene chloride	3.00 LJ	5.00	9
			ug/kg		
Sample	10/28/2003	Nickel	3.60 LJv	8.00	9
			mg/kg		
Sample	10/28/2003	Phenanthrene	90.00 JL	340.00	9
			ug/kg		

Source Characterization

(b) (6)

Sample	10/28/2003	Potassium	334.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Pyrene	180.00 LJ ug/kg	340.00	9
Sample	10/28/2003	Sodium	336.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Vanadium	12.80 mg/kg	10.00	9
Sample	10/28/2003	Zinc	23.20 mg/kg	4.00	9
Sample	10/28/2003	Aluminum	4,270.00 mg/kg	40.00	9
Sample	10/28/2003	Arsenic	3.70 Jv mg/kg	2.00	9
Sample	10/28/2003	Barium	136.00 mg/kg	40.00	9
Sample	10/28/2003	Benz(a)anthracene	110.00 LJ mg/kg	340.00	9
Sample	10/28/2003	Benzo(a)pyrene	220.00 LJ mg/kg	340.00	9
Sample	10/28/2003	Benzo(b)fluoranthene	160.00 LJ mg/kg	340.00	9
Sample	10/28/2003	Benzo(g,h,i)perylene	910.00 mg/kg	340.00	9
Sample	10/28/2003	Benzo(k)fluoranthene	67.00 LJ mg/kg	340.00	9
Sample	10/28/2003	Beryllium	0.47 L mg/kg	1.00	9
Sample	10/28/2003	Bis (2-ethylhexyl) phthalate	53.00 LJ mg/kg	340.00	9
Sample	10/28/2003	Calcium	40,800.00 mg/kg	1,000.00	9
Sample	10/28/2003	Chlordane, gamma-	2.20 LJ mg/kg	18.00	9
Sample	10/28/2003	Chromium	6.50 Jv mg/kg	2.00	9
Sample	10/28/2003	Chrysene	150.00 LJ mg/kg	340.00	9
Sample	10/28/2003	Cobalt	4.50 L mg/kg	10.00	9
Sample	10/28/2003	Copper	9.00 Jv mg/kg	5.00	9
Sample	10/28/2003	Dibenz(a,h)anthracene	140.00 LJ mg/kg	340.00	9
Sample	10/28/2003	Fluoranthene	110.00 LJ	340.00	9

Source Characterization

(b) (6)

			mg/kg		
Sample	10/28/2003	Indeno(1,2,3-cd)pyrene	170.00 LJ ug/L	340.00	9
Sample	10/28/2003	Iron	6,060.00 mg/kg	20.00	9
Sample	10/28/2003	Lead	27.60 mg/kg	0.60	9
Sample	10/28/2003	Magnesium	2,180.00 mg/kg	1,000.00	9
Sample	10/28/2003	Manganese	255.00 mg/kg	3.00	9
Sample	10/28/2003	Nickel	6.80 LJv mg/kg	8.00	9
Sample	10/28/2003	Phenanthrene	40.00 LJ mg/kg	340.00	9
Sample	10/28/2003	Potassium	423.00 L mg/kg	1,000.00	9
Sample	10/28/2003	Pyrene	130.00 LJ mg/kg	340.00	9
Sample	10/28/2003	Selenium	1.20 L mg/kg	1.00	9
Sample	10/28/2003	Sodium	205.00	1,000.00	9
Sample	10/28/2003	Vanadium	16.10 mg/kg	10.00	9
Sample	10/28/2003	Zinc	183.00 mg/kg	4.00	9

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Containment Description	Containment Factor Value	Ref.
Gas release to air: Uncontaminated soil cover ≥ 1 foot and ≤ 3 feet: Other.	10	5, 7
Particulate release to air: Uncontaminated soil cover ≥ 1 foot and ≤ 3 feet: Other.	10	5,7
Release to ground water: No evidence of hazardous	10	5, 7

Source Characterization

substance migration from source area, a liner, and: None of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) functioning leachate collection and removal system immediately above liner.		
Release via overland migration and/or flood: No evidence of hazardous substance migration from source area and: Neither of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system.	10	5, 7

Notes: NS Not Scored

2.2.4 HAZARDOUS WASTE QUANTITY

2.4.2.1.1. Hazardous Constituent Quantity

Description

Hazardous Substance	Constituent Quantity	(Units)	References
None			

Sum (pounds): 0.00

Hazardous Constituent Quantity Assigned Value: 0.00

2.4.2.1.2. Hazardous Wastestream Quantity

Description

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Source Characterization

Hazardous Wastestream	Wastestream Quantity	(Units)	References
None			

Sum (pounds): 0.00

Sum of Wastestream Quantity/5,000 (Table 2-5): 0.00

Hazardous Wastestream Quantity Assigned Value: 0.00

2.4.2.1.3. Volume

Description

Source Type	Volume	Units	References
None			

Sum (yd³/gal): 0.00

Equation for Assigning Value (Table 2-5): $V/2,500$

Volume Assigned Value: 0.00

2.4.2.1.4. Area

Description

Source Type	Area	Units	References
Landfill	30.00	acres	

Sum (ft²): 30.00

Equation for Assigning Value (Table 2-5): $A/3,400$

Area Assigned Value: 384.35

Source Characterization

2.4.2.1.5. Source Hazardous Waste Quantity Value

Highest assigned value assigned from Table 2-5: 384.35

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SUMMARY OF SOURCE DESCRIPTIONS

Source No.	Source Hazardous Waste Quantity Value	Source Hazardous Constituent Quantity Complete? (Y/N)	Containment Factor Value by Pathway				
			Ground Water (GW) (Table 3-2)	Surface Water (SW)		Air	
				Overland/flood (Table 4-2)	GW to SW (Table 3-2)	Gas (Table 6-3)	Particulate (Table 6-9)
1	384.35	No	10	10	10	10	10

Description of Other Possible Sources

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3.0 GROUND WATER MIGRATION PATHWAY

3.0.1 GENERAL CONSIDERATIONS

Ground Water Migration Pathway Description

- Aquifer/Stratum 1 (uppermost): Beaumont Formation

Description

This stratum is not an aquifer.

- Aquifer/Stratum 2: Chicot Aquifer

Description

This stratum is an aquifer.

- Aquifer/Stratum 3 (deepest): Evangeline Aquifer

Description

This stratum is an aquifer.

SUMMARY OF AQUIFER(S) BEING EVALUATED

Aquifer No.	Aquifer Name	Is Aquifer Interconnected with Upper Aquifer within 2 miles? (Y/N/NA)	Is Aquifer Continuous Within 4-mile TDL? (Y/N)	Is Aquifer Karst? (Y/N)
2	Chicot Aquifer	No		No
3	Evangeline Aquifer	No		No

3.1 LIKELIHOOD OF RELEASE

3.1.2 POTENTIAL TO RELEASE

3.1.2.1 Containment

Source No.	Source Haz. Waste Quantity Value \geq 0.5? (Y/N)	Containment Factor Value (Table 3-2)	Refs.
1	384.35	10	No evidence of hazardous substance migration from source area, a liner, and: None of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) functioning leachate collection and removal system immediately above liner.

Containment Factor Value: 10.00

3.1.2.2 Net Precipitation

Precipitation (inches): 3

Reference: Reference 1, pg. 84, Figure 3-2

Net Precipitation Factor Value: 3.00
(Figure 3-2 or Table 3-4)

3.1.2.3 Depth to Aquifer

Depth to Lowest Known Point of Hazardous Substances(ft): 0.00

Aquifer Being Evaluated:

Aquifer	Karst? (Y/N)	Depth to Aquifer (ft)	Thickness of Aquifer (ft)	Cumulative Depth (ft)	References
---------	--------------	-----------------------	---------------------------	-----------------------	------------

Chicot Aquifer	No	150.00	250.00	400.00	10, 12
Evangeline Aquifer	No	400.00	5,500.00	5,900.00	10,12

Depth to Aquifer Factor Value: 3.00
(Table 3-5)

3.1.2.4 Travel Time

Layer	Type of Material	Thickness (ft)	Hydraulic Conductivity (cm/sec) (Table 3-6)	Reference
Chicot Aquifer	No	250.00	1.00E-6	10, 12

Lowest Hydraulic Conductivity: 1.00E-6

Thickness of Layer(s) with Lowest Hydraulic Conductivity (ft): 250.00

Travel Time Factor Value: 1.00
(Table 3-7)

3.1.2.5 Calculation of Potential to Release Factor Value

Net Precipitation Factor Value: 3.00

Depth to Aquifer Factor Value: 3.00

Travel Time Factor Value: 1.00

Sum of Values: 7.00

Sum of Values x Containment Factor Value: 70.00

Potential to Release Factor Value: 70.00

3.1 LIKELIHOOD OF RELEASE

3.1.2 POTENTIAL TO RELEASE

3.1.2.1 Containment

Source No.	Source Haz. Waste Quantity Value \geq 0.5? (Y/N)	Containment Factor Value (Table 3-2)	Refs.
1	384.35	10	No evidence of hazardous substance migration from source area, a liner, and: None of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) functioning leachate collection and removal system immediately above liner.

Containment Factor Value: 10.00

3.1.2.2 Net Precipitation

Precipitation (inches): 3

Reference: Reference 1, pg. 84, Figure 3-2

Net Precipitation Factor Value: 3.00
(Figure 3-2 or Table 3-4)

3.1.2.3 Depth to Aquifer

Depth to Lowest Known Point of Hazardous Substances(ft): 0.00

Aquifer Being Evaluated:

Aquifer	Karst? (Y/N)	Depth to Aquifer (ft)	Thickness of Aquifer (ft)	Cumulative Depth (ft)	References
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Chicot Aquifer	No	150.00	250.00	400.00	10, 12
Evangeline Aquifer	No	400.00	5,500.00	5,900.00	10,12

Depth to Aquifer Factor Value: 1.00
(Table 3-5)

3.1.2.4 Travel Time

Layer	Type of Material	Thickness (ft)	Hydraulic Conductivity (cm/sec) (Table 3-6)	Reference
Evangeline Aquifer	No	5,500.00	1.00E-6	10,12

Lowest Hydraulic Conductivity: 1.00E-6

Thickness of Layer(s) with Lowest Hydraulic Conductivity (ft): 5,500.00

Travel Time Factor Value: 1.00
(Table 3-7)

3.1.2.5 Calculation of Potential to Release Factor Value

Net Precipitation Factor Value: 3.00

Depth to Aquifer Factor Value: 1.00

Travel Time Factor Value: 1.00

Sum of Values: 5.00

Sum of Values x Containment Factor Value: 50.00

Potential to Release Factor Value: 50.00

3.2 WASTE CHARACTERISTICS

3.2.1 TOXICITY/MOBILITY

Hazardous Substance	Source No.	Toxicity Factor Value	Mobility Factor Value	Does Haz. Substance Meet Observed Release? (Y/N)	Toxicity/Mobility (Table 3-9)	Reference
Acetone	1	10.00	1	Y	10	9
Acetophenone	1	10.00	0.1	N	1	9
Aluminum	1	0.00	0.1	N	0	9
Antimony	1	10,000.00	0.1	N	1E3	9
Arsenic	1	10,000.00	0.1	N	1E3	9
Barium	1	10,000.00	0.1	N	1E3	9
Benz(a)anthracene	1	1,000.00	0.1	N	1E2	9
Benzo(a)pyrene	1	10,000.00	0.1	N	1E3	9
Benzo(b)fluoranthene	1	1,000.00	0.1	N	1E2	9
Benzo(g,h,i)perylene	1	0.00	1	Y	0	9
Benzo(k)fluoranthene	1	100.00	0.1	N	10	9
Beryllium	1	10,000.00	0.1	N	1E3	9
Biphenyl, 1,1'-	1	10.00	0.1	N	1	9
Bis (2-ethylhexyl) phthalate	1	100.00	1	Y	1E2	9
Butylbenzyl phthalate	1	10.00	0.1	N	1	9
Cadmium	1	10,000.00	0.1	N	1E3	9
Calcium	1	0.00	0.1	N	0	9
Chlordane, gamma-	1	10.00	0.1	N	1	9
Chromium	1	10,000.00	0.1	N	1E3	9
Chrysene	1	10.00	0.1	N	1	9
Cobalt	1	1.00	1	Y	1	9
Copper	1	0.00	0.1	N	0	9
Di-n-butyl phthalate	1	10.00	0.1	N	1	9
Dibenz(a,h)anthracene	1	10,000.00	0.1	N	1E3	9
Fluoranthene	1	100.00	0.1	N	10	9
Indeno(1,2,3-cd)pyrene	1	1,000.00	0.1	N	1E2	9
Iron	1	1.00	0.1	N	0.1	9
Lead	1	10,000.00	0.1	N	1E3	9
Magnesium	1	0.00	0.1	N	0	9
Manganese	1	10,000.00	0.1	N	1E3	9
Mercury	1	10,000.00	0.1	N	1E3	9
Methyl ethyl ketone	1	10.00	0.1	N	1	9
Methylene chloride	1	10.00	0.1	N	1	9
Nickel	1	10,000.00	0.1	N	1E3	9
Nitrosodiphenyl	1	10.00	0.1	N	1	9

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Phenanthrene	1	0.00	0.1	N	0	9
Potassium	1	0.00	0.1	N	0	9
Pyrene	1	100.00	0.1	N	10	9
Selenium	1	100.00	0.1	N	10	9
Sodium	1	0.00	0.1	N	0	9
Vanadium	1	100.00	0.1	N	10	9
Zinc	1	10.00	1	Y	10	9

Toxicity/Mobility Factor Value: 100.00
(Table 3-9)

3.2.2 HAZARDOUS WASTE QUANTITY

Source No.	Source Type	Source Hazardous Waste Quantity
1	Landfill	384.35

Sum of Values: 384.35

Hazardous Waste Quantity Factor Value: 100.00
(Table 2-6)

3.2.3 WASTE CHARACTERISTICS FACTOR CATEGORY VALUE

Toxicity/Mobility Factor Value: 100.00
Hazardous Waste Quantity Factor Value: 100.00

Toxicity/Mobility Factor Value X
Hazardous Waste Quantity Factor Value: 10,000.00

Waste Characteristics Factor Category Value: 10.00
(Table 2-7)

3.3 TARGETS

3.3.1 NEAREST WELL

Well ID: 0.00

Level of Contamination (I, II, or potential): 0.00

If potential contamination, distance from source in miles: 0.00

Nearest Well Factor Value: 0.00
(Table 3-11)

3.3.2 POPULATION

3.3.2.1 Level of Contamination

3.3.2.2 Level I Concentrations

Level I Well	Aquifer No.	Population	Reference
None			

Sum of Population Served by Level I Wells: 0.00

Sum of Population Served by Level I Wells x 10: 0.00

Level I Concentrations Factor Value: 0.00

3.3.2.3 Level II Concentrations

Level II Well	Aquifer No.	Population	Reference
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None			

Sum of Population Served by Level II Wells:

Level II Concentrations Factor Value: 0.00

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3.3.2.4 Potential Contamination

Distance Category	Population	Reference	Distance-Weighted Population Value (Table 3-12)
None			

Calculations:

Sum of Distance-Weighted Population Values: 0.00

Sum of Distance-Weighted Population Values/10: 0.00

Potential Contamination Factor Value: 0.00

3.3.3 RESOURCES

Well ID	Aquifer No.	Resource Use	Reference
None			

Resources Factor Value: 0.00

3.3.4 WELLHEAD PROTECTION AREA

Area	Use	Reference	Value
None			

Wellhead Protection Area Factor Value: 0.00

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3.2 WASTE CHARACTERISTICS

3.2.1 TOXICITY/MOBILITY

Hazardous Substance	Source No.	Toxicity Factor Value	Mobility Factor Value	Does Haz. Substance Meet Observed Release? (Y/N)	Toxicity/Mobility (Table 3-9)	Reference
Acetone	1	10.00	1	Y	10	9
Acetophenone	1	10.00	0.1	N	1	9
Aluminum	1	0.00	0.1	N	0	9
Antimony	1	10,000.00	0.1	N	1E3	9
Arsenic	1	10,000.00	0.1	N	1E3	9
Barium	1	10,000.00	0.1	N	1E3	9
Benz(a)anthracene	1	1,000.00	0.1	N	1E2	9
Benzo(a)pyrene	1	10,000.00	0.1	N	1E3	9
Benzo(b)fluoranthene	1	1,000.00	0.1	N	1E2	9
Benzo(g,h,i)perylene	1	0.00	1	Y	0	9
Benzo(k)fluoranthene	1	100.00	0.1	N	10	9
Beryllium	1	10,000.00	0.1	N	1E3	9
Biphenyl, 1,1'-	1	10.00	0.1	N	1	9
Bis (2-ethylhexyl) phthalate	1	100.00	1	Y	1E2	9
Butylbenzyl phthalate	1	10.00	0.1	N	1	9
Cadmium	1	10,000.00	0.1	N	1E3	9
Calcium	1	0.00	0.1	N	0	9
Chlordane, gamma-	1	10.00	0.1	N	1	9
Chromium	1	10,000.00	0.1	N	1E3	9
Chrysene	1	10.00	0.1	N	1	9
Cobalt	1	1.00	1	Y	1	9
Copper	1	0.00	0.1	N	0	9
Di-n-butyl phthalate	1	10.00	0.1	N	1	9
Dibenz(a,h)anthracene	1	10,000.00	0.1	N	1E3	9
Fluoranthene	1	100.00	0.1	N	10	9
Indeno(1,2,3-cd)pyrene	1	1,000.00	0.1	N	1E2	9
Iron	1	1.00	0.1	N	0.1	9
Lead	1	10,000.00	0.1	N	1E3	9
Magnesium	1	0.00	0.1	N	0	9
Manganese	1	10,000.00	0.1	N	1E3	9
Mercury	1	10,000.00	0.1	N	1E3	9
Methyl ethyl ketone	1	10.00	0.1	N	1	9
Methylene chloride	1	10.00	0.1	N	1	9
Nickel	1	10,000.00	0.1	N	1E3	9
Nitrosodiphenyl	1	10.00	0.1	N	1	9

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Phenanthrene	1	0.00	0.1	N	0	9
Potassium	1	0.00	0.1	N	0	9
Pyrene	1	100.00	0.1	N	10	9
Selenium	1	100.00	0.1	N	10	9
Sodium	1	0.00	0.1	N	0	9
Vanadium	1	100.00	0.1	N	10	9
Zinc	1	10.00	1	Y	10	9

Toxicity/Mobility Factor Value: 100.00
(Table 3-9)

3.2.2 HAZARDOUS WASTE QUANTITY

Source No.	Source Type	Source Hazardous Waste Quantity
1	Landfill	384.35

Sum of Values: 384.35

Hazardous Waste Quantity Factor Value: 100.00
(Table 2-6)

3.2.3 WASTE CHARACTERISTICS FACTOR CATEGORY VALUE

Toxicity/Mobility Factor Value: 100.00
Hazardous Waste Quantity Factor Value: 100.00

Toxicity/Mobility Factor Value X
Hazardous Waste Quantity Factor Value: 10,000.00

Waste Characteristics Factor Category Value: 10.00
(Table 2-7)

3.3 TARGETS

3.3.1 NEAREST WELL

Well ID: 0.00

Level of Contamination (I, II, or potential): 0.00

If potential contamination, distance from source in miles: 0.00

Nearest Well Factor Value: 0.00
(Table 3-11)

3.3.2 POPULATION

3.3.2.1 Level of Contamination

3.3.2.2 Level I Concentrations

Level I Well	Aquifer No.	Population	Reference
None			

Sum of Population Served by Level I Wells: 0.00

Sum of Population Served by Level I Wells x 10: 0.00

Level I Concentrations Factor Value: 0.00

3.3.2.3 Level II Concentrations

Level II Well	Aquifer No.	Population	Reference
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None			

Sum of Population Served by Level II Wells:

Level II Concentrations Factor Value: 0.00

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3.3.2.4 Potential Contamination

Distance Category	Population	Reference	Distance-Weighted Population Value (Table 3-12)
None			

Calculations:

Sum of Distance-Weighted Population Values: 0.00

Sum of Distance-Weighted Population Values/10: 0.00

Potential Contamination Factor Value: 0.00

3.3.3 RESOURCES

Well ID	Aquifer No.	Resource Use	Reference
None			

Resources Factor Value: 0.00

3.3.4 WELLHEAD PROTECTION AREA

Area	Use	Reference	Value
None			

Wellhead Protection Area Factor Value: 0.00

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4.0 SURFACE WATER MIGRATION PATHWAY - Buffalo-San Jacinto

4.1 OVERLAND/FLOOD MIGRATION COMPONENT

4.1.1.1 Definition of Hazardous Substance Migration Path for Overland/flood Component

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4.1.2.1 Likelihood of Release

4.1.2.1.2 Potential to Release

4.1.2.1.2.1 Potential to Release by Overland Flow

4.1.2.1.2.1.1 Containment

Source No.	Source Haz. Waste Quantity Value $\geq .0.5$? (Y/N)	Containment Factor Value (Table 4-2)	Refs.
1	384.35	No evidence of hazardous substance migration from source area and: Neither of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system.	5

Containment Factor Value: 10.00

4.1.2.1.2.1.2 Runoff

Rainfall

2-year, 24-hour Rainfall (inches): 5.40

Reference: 14

Drainage Area Description

Drainage area for the watershed (acres): 30.00

Drainage Area value: 1.00
(Table 4-3)

Soil Group

Surface Soil Description	Reference	Soil Group Designation (Table 4-4)
Fine-textured soils with very low infiltration rate or Impermeable surfaces	17	D

Drainage Area Value (Table 4-3): 1.00

2-year, 24-hour Rainfall: 5.40

Soil Group Designation (Table 4-4): D

Rainfall/Runoff Value (Table 4-5): 6.00

Runoff Factor Value: 1.00
(Table 4-6)

4.1.2.1.2.1.3 Distance to Surface Water

Source No.	Distance to Surface Water	Reference
1	1.20	4

Shortest distance to surface water: 1.20

Distance to Surface Water Factor Value: 6.00
(Table 4-7)

4.1.2.1.2.1.4 Calculation of Factor Value for Potential to Release by Overland Flow

Runoff Factor Value: 1.00

Distance to Surface Water Factor Value: 6.00

Sum of Values:

Sum of Values x Containment Factor Value:

Potential to Release by Overland Flow Factor Value: 70.00

4.1.2.1.2.2 Potential to Release by Flood

Source No.	Source Haz. Waste Quantity Value, 0.5? (Y/N)	Flood Containment Factor Value (Table 4-8)	Floodplain Category	Flood Frequency Factor Value (Table 4-9)	Potential to Release by Flood Factor Value*
1	384.35	Source in 500-year floodplain	10	7	70

Notes:

* Flood Containment Factor Value x Flood Frequency Factor Value

Potential to Release by Flood Factor Value: 70.00

4.1.2.2 Drinking Water Threat Waste Characteristics

4.1.2.2.1 Toxicity/Persistence

Hazardous Substance	Source No.	Toxicity Factor Value	Persistence Factor Value	Toxicity/ Persistence Factor Value (Table 4-12)	Reference
Acetone	1	10.00	0.40	4.00	9
Acetophenone	1	10.00	1.00	10.00	9
Aluminum	1	0.00	1.00	0.00	9
Antimony	1	10,000.00	1.00	10,000.00	9
Arsenic	1	10,000.00	1.00	10,000.00	9
Barium	1	10,000.00	1.00	10,000.00	9
Benz(a)anthracene	1	1,000.00	1.00	1,000.00	9
Benzo(a)pyrene	1	10,000.00	1.00	10,000.00	9
Benzo(b)fluoranthene	1	1,000.00	1.00	1,000.00	9
Benzo(g,h,i)perylene	1	0.00	1.00	0.00	9
Benzo(k)fluoranthene	1	100.00	1.00	100.00	9
Beryllium	1	10,000.00	1.00	10,000.00	9
Biphenyl, 1,1-	1	10.00	0.40	4.00	9
Bis (2-ethylhexyl) phthalate	1	100.00	1.00	100.00	9
Butylbenzyl phthalate	1	10.00	1.00	10.00	9
Cadmium	1	10,000.00	1.00	10,000.00	9
Calcium	1	0.00	1.00	0.00	9
Chlordane, gamma-	1	10.00	1.00	10.00	9
Chromium	1	10,000.00	1.00	10,000.00	9
Chrysene	1	10.00	1.00	10.00	9
Cobalt	1	1.00	1.00	1.00	9
Copper	1	0.00	1.00	0.00	9
Di-n-butyl phthalate	1	10.00	1.00	10.00	9
Dibenz(a,h)anthracene	1	10,000.00	1.00	10,000.00	9
Fluoranthene	1	100.00	1.00	100.00	9
Indeno(1,2,3-cd)pyrene	1	1,000.00	1.00	1,000.00	9
Iron	1	1.00	1.00	1.00	9
Lead	1	10,000.00	1.00	10,000.00	9
Magnesium	1	0.00	1.00	0.00	9
Manganese	1	10,000.00	1.00	10,000.00	9
Mercury	1	10,000.00	0.40	4,000.00	9
Methyl ethyl ketone	1	10.00	0.40	4.00	9
Methylene chloride	1	10.00	0.40	4.00	9
Nickel	1	10,000.00	1.00	10,000.00	9
Nitrosodiphenylamine, N-	1	10.00	1.00	10.00	9
Phenanthrene	1	0.00	1.00	0.00	9
Potassium	1	0.00	1.00	0.00	9
Pyrene	1	100.00	1.00	100.00	9
Selenium	1	100.00	1.00	100.00	9

Sodium	1	0.00	1.00	0.00	9
Vanadium	1	100.00	1.00	100.00	9
Zinc	1	10.00	1.00	10.00	9

Toxicity/Persistence Factor Value: 10,000.00

4.1.2.2.2 Hazardous Waste Quantity

Source No.	Source Type	Source Hazardous Waste Quantity
1	Landfill	384.35

Sum of Values: 384.35

Hazardous Waste Quantity Factor Value: 100.00
(Table 2-6)

4.1.2.2.3 Waste Characteristics Factor Category Value

Toxicity/Persistence Factor Value: 10,000.00
Hazardous Waste Quantity Factor Value: 100.00

Toxicity/Persistence Factor Value x
Hazardous Waste Quantity Factor Value: 1,000,000.00

Waste Characteristics Factor Category Value: 32.00
(Table 2-7)

4.1.2.3 Drinking Water Threat Targets

Level I Concentrations

Sample ID	Hazardous Substance	Hazardous Substance Concentration	Benchmark Concentration	Benchmark	Refs.
None					

Most Distant Level I Sample

Sample ID:

Distance from the probable point of entry: 0.00

Reference:

Most Distant Level II Sample

Sample ID:

Distance from the probable point of entry: 0.00

Reference:

4.1.2.3.1 Nearest Intake

Location of Nearest Drinking Water Intake:

Level I/Level II/or Potential:

Distance from the probable point of entry: 0.00

Type of Surface Water Body:

Dilution Weight (Table 4-13): 0.00

References:

Nearest Intake Factor Value: 0.00

4.1.2.3.2 Population

4.1.2.3.2.2 Level I Concentrations

Intake	Distance Along the In-water Segment from PPE	Population	References
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None			

Sum of Populations Served by Level I Intakes: 0.00

Sum of Populations Served by Level I Intakes x 10: 0.00

Level I Population Factor Value: 0.00

4.1.2.3.2.3 Level II Concentrations

Intake	Distance Along the In-water Segment from PPE	Population	References
None			

Sum of Populations Served by Level II Intakes: 0.00

Level II Population Factor Value: 0.00

4.1.2.3.2.4 Potential Contamination

Intake	Type of Surface Water Body	Average Annual Flow (cfs)	Population Served	References
None				

Type of Surface Water Body	Total Population	Dilution-Weighted Population Value (Table 4-14)
None		

Sum of Distance-Weighted Population Values: 0.00

Sum of Distance-Weighted Population Values/10: 0.00

Potential Contamination Factor Value: 0.00

4.1.2.3.3 Resources

Surface Water Body	Resource Use	Reference
Buffalo-San Jacinto		

Resources Factor Value: 0.00

4.1.3.2 Human Food Chain Threat Waste Characteristics

4.1.3.2.1 Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Source No.	Toxicity Factor Value	Persistence Factor Value*	Bioaccumulation Value**	Toxicity/Persistence/Bioaccumulation Factor Value (Table 4-16)	Ref.
Acetone	1	10.00	0.40	0.50	2.00	9
Acetophenone	1	10.00	1.00	5.00	50.00	9
Aluminum	1	0.00	1.00	50.00	0.00	9
Antimony	1	10,000.00	1.00	0.50	5,000.00	9
Arsenic	1	10,000.00	1.00	5.00	50,000.00	9
Barium	1	10,000.00	1.00	0.50	5,000.00	9
Benz(a)anthracene	1	1,000.00	1.00	50,000.00	50,000,000.00	9
Benzo(a)pyrene	1	10,000.00	1.00	50,000.00	500,000,000.00	9
Benzo(b)fluoranthene	1	1,000.00	1.00	50,000.00	50,000,000.00	9
Benzo(g,h,i)perylene	1	0.00	1.00	50,000.00	0.00	9
Benzo(k)fluoranthene	1	100.00	1.00	50,000.00	5,000,000.00	9
Beryllium	1	10,000.00	1.00	50.00	500,000.00	9
Biphenyl, 1,1-	1	10.00	0.40	500.00	2,000.00	9
Bis (2-ethylhexyl) phthalate	1	100.00	1.00	50,000.00	5,000,000.00	9
Butylbenzyl phthalate	1	10.00	1.00	500.00	5,000.00	9
Cadmium	1	10,000.00	1.00	5,000.00	50,000,000.00	9
Calcium	1	0.00	1.00	500.00	0.00	9
Chlordane, gamma-	1	10.00	1.00	50,000.00	500,000.00	9
Chromium	1	10,000.00	1.00	5.00	50,000.00	9
Chrysene	1	10.00	1.00	500.00	5,000.00	9
Cobalt	1	1.00	1.00	0.50	0.50	9
Copper	1	0.00	1.00	50,000.00	0.00	9
Di-n-butyl phthalate	1	10.00	1.00	5,000.00	50,000.00	9
Dibenz(a,h)anthracene	1	10,000.00	1.00	50,000.00	500,000,000.00	9
Fluoranthene	1	100.00	1.00	5,000.00	500,000.00	9
Indeno(1,2,3-cd)pyrene	1	1,000.00	1.00	50,000.00	50,000,000.00	9
Iron	1	1.00	1.00	0.50	0.50	9
Lead	1	10,000.00	1.00	50.00	500,000.00	9
Magnesium	1	0.00	1.00	0.50	0.00	9
Manganese	1	10,000.00	1.00	0.50	5,000.00	9
Mercury	1	10,000.00	0.40	50,000.00	200,000,000.00	9
Methyl ethyl ketone	1	10.00	0.40	0.50	2.00	9
Methylene chloride	1	10.00	0.40	5.00	20.00	9
Nickel	1	10,000.00	1.00	0.50	5,000.00	9
Nitrosodiphenylamine, N-	1	10.00	1.00	500.00	5,000.00	9
Phenanthrene	1	0.00	1.00	50.00	0.00	9
Potassium	1	0.00	1.00	0.50	0.00	9
Pyrene	1	100.00	1.00	50.00	5,000.00	9
Selenium	1	100.00	1.00	5,000.00	500,000.00	9
Sodium	1	0.00	1.00	0.50	0.00	9

Vanadium	1	100.00	1.00	0.50	50.00	9
Zinc	1	10.00	1.00	500.00	5,000.00	9

Notes:

- * Persistence value for (Lakes or Rivers)
- ** Bioaccumulation factor value for (Salt or Freshwater)

Toxicity/Persistence/Bioaccumulation Factor Value: 500,000,000.00

4.1.3.2.2 Hazardous Waste Quantity

Source No.	Source Type	Source Hazardous Waste Quantity
1	Landfill	384.35

Sum of Values: 384.35

Hazardous Waste Quantity Factor Value: 100.00
(Table 2-6)

4.1.3.2.3 Waste Characteristics Factor Category Value

Toxicity/Persistence Factor Value: 10,000.00
Hazardous Waste Quantity Factor Value: 100.00

Toxicity/Persistence Factor Value x
Hazardous Waste Quantity Factor Value: 1,000,000.00

Toxicity/Persistence Factor Value x
Hazardous Waste Quantity Factor Value x Bioaccumulation Factor Value: 5E10

Waste Characteristics Factor Category Value: 320.00
(Table 2-7)

4.1.3.3 Human Food Chain Threat Targets

Actual Human Food Chain Contamination

Sample ID	Sample Medium	Distance from PPE	Hazardous Substance	Bioaccumulation Factor Value	Refs.
None					

- Closed Fisheries:

Identity of Fishery	Sample ID	Distance from PPE	Hazardous Substance	Refs.
None				

- Benthic Tissue:

Identity of Fishery	Sample ID	Distance from PPE	Hazardous Substance	Organism	Refs.
None					

Level I Concentrations

Sample ID	Sample Medium	Hazardous Substance	Hazardous Substance Concentration	Benchmark Concentration	Benchmark	Refs.
None						

Most Distant Level I Sample

Sample ID:

Distance from the probable point of entry: 0.00

Reference:

Level I Fisheries

Identity of Fishery	Extent of Level I Fishery (Relative to PPE)	Refs.
None		

Most Distant Level II Sample

Sample ID:

Distance from the probable point of entry: 0.00

Reference:

Level II Fisheries

Identity of Fishery	Extent of Level II Fishery (Relative to PPE or Level I Fishery)	Refs.
None		

4.1.3.3.1 Food Chain Individual

Sample ID:

Level I/Level II/or Potential:

Hazardous Substance:

Bioaccumulation Potential: 0.00

Identity of Fishery	Type of Surface Water Body	Dilution Weight (Table 4-13)	Refs.
None			

Food Chain Individual Factor Value: 0.00

4.1.3.3.2 Population

4.1.3.3.2.1 Level I Concentrations

Identity of Fishery	Annual Production (pounds)	References	Human Food Chain Population Value (Table 4-18)
None			

Sum of Level I Human Food Chain Population Values: 0.00

Sum of Level I Human Food Chain Population Values x 10: 0.00

Level I Concentrations Factor Value: 0.00

4.1.3.3.2.2 Level II Concentrations

Identity of Fishery	Annual Production (pounds)	References	Human Food Chain Population Value (Table 4-18)
None			

Sum of Level II Human Food Chain Population Values: 0.00

Level II Concentrations Factor Value: 0.00

4.1.3.3.2.3 Potential Human Food Chain Contamination

Identity of Fishery	Annual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Refs.	Population Value (P _i) (Table 4-18)	Dilution Weight (D _i)(Table 4-13)	P _i x D _i
None							

--	--	--	--	--	--	--	--

Sum of $P_i \times D_i$: 0.00
 (Sum of $P_i \times D_i$)/10: 0.00

Potential Human Food Chain Contamination Factor Value: 0.00

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4.1.4.2 Environmental Threat Waste Characteristics

4.1.4.2.1 Ecosystem Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Source No.	Ecosystem Toxicity Factor Value	Persistence Factor Value*	Bioaccumulation Value**	Ecosystem Toxicity/Persistence/Bioaccumulation Factor Value (Table 4-21)	Ref.
None						

Notes:

- * Persistence value for (Lakes or Rivers)
- ** Bioaccumulation factor value for (Salt or Freshwater)

Ecosystem Toxicity/Persistence/Bioaccumulation Factor Value: 500,000,000.00

4.1.4.2.2. Hazardous Waste Quantity

Source No.	Source Type	Source Hazardous Waste Quantity
1	Landfill	384.35

Sum of Values: 384.35

Hazardous Waste Quantity Factor Value: 100.00
(Table 2-6)

4.1.4.2.3. Waste Characteristics Factor Category Value

Ecosystem Toxicity/Persistence Factor Value: 10,000.00

Hazardous Waste Quantity Factor Value: 100.00

Ecosystem Toxicity/Persistence Factor Value x
Hazardous Waste Quantity Factor Value: 1,000,000.00

Toxicity/Persistence Factor Value x
Hazardous Waste Quantity Factor Value x Bioaccumulation Factor Value: 5E10

Waste Characteristics Factor Category Value: 320.00
(Table 2-7)

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4.1.4.3 Environmental Threat Targets

Level I Concentrations

Sample ID	Sample Medium	Hazardous Substance	Hazardous Substance Concentration	Benchmark Concentration	Benchmark	Refs.
None						

Most Distant Level I Sample

Sample ID:

Distance from the probable point of entry: 0.00

Reference:

Most Distant Level II Sample

Sample ID:

Distance from the probable point of entry: 0.00

Reference:

4.1.4.3.1 Sensitive Environments

4.1.4.3.1.1. Level I Concentrations

Sensitive Environments

Sensitive Environment	Distance from PPE to Nearest Sensitive Environment	References	Sensitive Environment Value (Table 4-23)
None			

Sum of Level I Sensitive Environments Value: 0.00

Wetlands

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Wetland	Wetland Frontage (miles)	References
None		

Sum of Level I Wetland Frontages: 0.00

Wetlands Value (Table 4-24): 0.00

Sum of Level I Sensitive Environments Value + Wetlands Value: 0.00

(Sum of Level Sensitive Environments Value + Wetlands Value) x 10: 0.00

Level I Concentrations Factor Value: 0.00

4.1.4.3.1.2. Level II Concentrations

Sensitive Environments

Sensitive Environment	Distance from PPE to Nearest Sensitive Environment	References	Sensitive Environment Value (Table 4-23)
None			

Sum of Level II Sensitive Environments Value: 0.00

Wetlands

Wetland	Wetland Frontage (miles)	References
None		

Sum of Level II Wetland Frontages: 0.00

Wetlands Value (Table 4-24): 0.00

Sum of Level II Sensitive Environments Value + Wetlands Value: 0.00

Level II Concentrations Factor Value: 0.00

4.1.4.3.1.3 Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	References	Sensitive Environment Value (Table 4-23)
None			

Wetlands

Type of Surface Water Body	Wetland Frontage (miles)	References	Wetlands Value (Table 4-24)
None			

Type of Surface Water Body	Sum of Sensitive Environments Values (S_j)	Wetland Frontage Value (W_j)	Dilution Weight (D_j) (Table 4-13)	$D_j(W_j + S_j)$
None				

Sum of $D_j(W_j + S_j)$: 0.00
(Sum of $D_j(W_j + S_j)$)/10: 0.00

Potential Contamination Factor Value: 0.00

5.0 SOIL EXPOSURE PATHWAY

5.0.1 GENERAL CONSIDERATIONS

Letter by which this area is to be identified: A

Name of area: Booker Landfill

Location and description of area (with reference to a map of the site):

29.84664 deg. N, 95.43362 deg. W, south of (b) (6) between (b) (6) and (b) (6)

(b) (6)

Former municipal landfill

Observed Contamination Evidence:

[In general text, describe the sampling events and analytical results that will be presented below to establish observed contamination for this AOC.]

- Background Samples for Area [area letter]: A

Sample ID	Sample Matrix	Depth	Date	Reference
6	N/A	0.00	10/28/2003	9
7	N/A	0.00	10/28/2003	9
8	N/A	0.00	10/28/2003	9

Sample ID	Hazardous Substance	Concentration (µg/L)	Sample Quantitation Limit (µg/L)	Reference
6	Manganese	291.00 mg/kg	3.00	9
6	Calcium	30,400.00 mg/kg	1,000.00	9
6	Methylene chloride	3.00 LJ ug/kg	10.00	9
6	Aluminum	4,170.00 mg/kg	40.00	9
6	Barium	107.00 mg/kg	40.00	9
6	Beryllium	0.49 L mg/kg	1.00	9
6	Chromium	5.70 Jv mg/kg	2.00	9

6	Cobalt	4.50 L mg/kg	10.00	9
6	Copper	12.10 Jv mg/kg	5.00	9
6	Zinc	50.30 mg/kg	4.00	9
6	Magnesium	1,940.00 mg/kg	1,000.00	9
6	Lead	26.10 mg/kg	0.60	9
6	Iron	5,980.00 mg/kg	20.00	9
6	Arsenic	4.70 Jv mg/kg	2.00	9
6	Vanadium	15.50 mg/kg	10.00	9
6	Potassium	501.00 L mg/kg	1,000.00	9
6	Nickel	7.80 LJv mg/kg	8.00	9
6	Sodium	132.00 L mg/kg	1,000.00	9
7	Chromium	57.00 Jv mg/kg	2.00	9
7	Cobalt	2.10 L mg/kg	10.00	9
7	Copper	12.60 Jv mg/kg	5.00	9
7	Beryllium	0.16 L mg/kg	1.00	9
7	Zinc	51.20 mg/kg	4.00	9
7	Manganese	64.90 mg/kg	3.00	9
7	Calcium	16,100.00 mg/kg	1,000.00	9
7	Barium	38.60 L mg/kg	40.00	9
7	Acetophenone	43.00 LJ ug/kg	340.00	9
7	Butylbenzyl phthalate	64.00 LJ ug/kg	340.00	9
7	Phenanthrene	88.00 LJ ug/kg	340.00	9
7	Acetone	14.00 ug/kg	10.00	9
7	Benz(a)anthracene	110.00 LJ ug/kg	340.00	9
7	Benzo(a)pyrene	120.00 LJ ug/kg	340.00	9
7	Vanadium	6.10 L	10.00	9

			mg/kg		
7	Benzo(k)fluoranthene	120.00	LJ ug/kg	340.00	9
7	Nickel	22.40	Jv mg/kg	8.00	9
7	Magnesium	456.00	L mg/kg	1,000.00	9
7	Lead	69.00	mg/kg	0.60	9
7	Iron	2,450.00	mg/kg	20.00	9
7	Aluminum	1,380.00	mg/kg	40.00	9
7	Chrysene	130.00	LJ ug/kg	340.00	9
7	Potassium	81.90	L mg/kg	1,000.00	9
7	Fluoranthene	220.00	LJ ug/kg	340.00	9
7	Benzo(b)fluoranthene	100.00	LJ ug/kg	340.00	9
7	Indeno(1,2,3-cd)pyrene	80.00	LJ ug/kg	340.00	9
7	Benzo(g,h,i)perylene	65.00	LJ ug/kg	340.00	9
7	Pyrene	170.00	LJ ug/kg	340.00	9
7	Bis (2-ethylhexyl) phthalate	170.00	LJ ug/kg	340.00	9
7	Arsenic	3.90	Jv mg/kg	2.00	9
8	Zinc	149.00	mg/kg	4.00	9
8	Vanadium	9.50	L mg/kg	10.00	9
8	Copper	82.50	Jv mg/kg	5.00	9
8	Cobalt	4.10	L mg/kg	10.00	9
8	Chromium	122.00	Jv mg/kg	2.00	9
8	Beryllium	0.20	L mg/kg	1.00	9
8	Benzo(a)pyrene	40.00	LJ ug/kg	350.00	9
8	Barium	64.90	mg/kg	40.00	9

8	Fluoranthene	61.00	LJ ug/kg	350.00	9
8	Benzo(b)fluoranthene	40.00	LJ ug/kg	350.00	9
8	Pyrene	55.00	LJ ug/kg	350.00	9
8	Bis (2-ethylhexyl) phthalate	160.00	LJ ug/kg	350.00	9
8	Butylbenzyl phthalate	45.00	LJ ug/kg	350.00	9
8	Benzo(k)fluoranthene	40.00	LJ ug/kg	350.00	9
8	Sodium	230.00	L mg/kg	1,000.00	9
8	Antimony	2.90	L mg/kg	12.00	9
8	Arsenic	43.00	Jv mg/kg	2.00	9
8	Lead	58.50	ug/kg	0.60	9
8	Magnesium	543.00	L mg/kg	1,000.00	9
8	Manganese	122.00	mg/kg	3.00	9
8	Nickel	87.50	Jv mg/kg	8.00	9
8	Chrysene	48.00	LJ ug/kg	350.00	9
8	Aluminum	1,090.00	mg/kg	40.00	9
8	Iron	23,900.00	mg/kg	20.00	9
8	Calcium	28,800.00	mg/kg	1,000.00	9
8	Potassium	75.10	L mg/kg	1,000.00	9

- Contaminated Samples for Area [area letter] A

Sample ID	Sample Matrix	Depth	Date	Reference
2	N/A	0.00	10/28/2003	9
5	N/A	0.00	10/28/2003	9
9	N/A	0.00	10/27/2003	9
10	N/A	0.00	10/27/2003	9

11	N/A	0.00	10/27/2003	9
12	N/A	0.00	10/27/2003	9
14	N/A	0.00	10/28/2003	9
16	N/A	0.00	10/28/2003	9
20	N/A	0.00	10/28/2003	9

– Observed Contamination Concentrations for Area [area letter]: A

Sample ID	Hazardous Substance	Concentration (µg/L)	Sample Quantitation Limit (µg/L)	Background Sample Used	Reference
2	Acetone	1,800.00 D ug/kg	5.00		9
5	Benzo(g,h,i)perylene	910.00 mg/kg	340.00		9
9	Acetone	170.00 J ug/kg	10.00		9
10	Zinc	538.00 mg/kg	4.00		9
10	Cobalt	10.40 L mg/kg	10.00		9
10	Bis (2-ethylhexyl) phthalate	1,100.00 ug/kg	450.00		9
11	Bis (2-ethylhexyl) phthalate	420.00 ug/kg	350.00		9
12	Bis (2-ethylhexyl) phthalate	440.00 ug/kg	340.00		9
14	Bis (2-ethylhexyl) phthalate	520.00 mg/kg	350.00		9
16	Acetone	42.00 B ug/kg	13.00		9
20	Acetone	90.00 ug/kg	13.00		9

Notes:

Attribution

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5.2 NEARBY POPULATION THREAT

5.2.1 LIKELIHOOD OF EXPOSURE

5.2.1.1 Attractiveness/Accessibility

Area Letter	Description of Area	Assigned Value (Table 5-6)	References
A	Moderately accessible (may have some access improvements--for example, gravel road), with some public recreation use	50	5

Attractiveness/Accessibility Factor Value: 50
(Table 5-6)

5.2.1.2 Area of Contamination

Area Letter	Size of Area of Observed Contamination (ft ²)	References
A	1,306,800.00	5

Total Area of Observed Contamination(ft²): 1,306,800.00

Area of Contamination Factor Value: 100
(Table 5-7)

5.2.1.3 Likelihood of Exposure Factor Category

Area of Contamination Factor Value: 100

Attractiveness/Accessibility Factor Value: 50

Nearby Population Likelihood of Exposure Factor Category Value: 375
(Table 5-8)

5.2.2 WASTE CHARACTERISTICS

5.2.2.1 Toxicity

Hazardous Substance	Toxicity Factor Value	Reference
Acetone	10.00	
Benzo(g,h,i)perylene	0.00	
Bis (2-ethylhexyl) phthalate	100.00	
Cobalt	1.00	
Zinc	10.00	

Toxicity Factor Value: 10

5.2.2.2 Hazardous Waste Quantity

Area Letter	Source Type	Area Hazardous Waste Quantity
A	Landfill	38.44

Sum of Values: 38.44

Hazardous Waste Quantity Factor Value: 10
(Table 2-6)

5.2.2.3 Calculation of Waste Characteristics Factor Category Value

Toxicity Factor Value: 10

Hazardous Waste Quantity Factor Value: 10

Toxicity Factor Value x Hazardous Waste Quantity Factor Value: 1.00E+2

Waste Characteristics Factor Category Value: 3
(Table 2-7)

5.2.3 TARGETS

5.2.3.1 Nearby Individual

Area Letter	Travel Distance from Residence or School	Assigned Value (Table 5-9)	References
A	Greater than 0 to 1/4	1.00	18
A	Greater than 1/4 to 1/2	0.00	18
A	Greater than 1/2 to 1	0.00	18

Nearby Individual Factor Value: 1

5.2.3.2 Population Within 1 Mile

Travel Distance Category (miles)	Number of People	Distance-Weighted Value (Table 5-10)	References
Greater than 0 to 1/4	323.00	13.00	18
Greater than 1/4 to 1/2	1,513.00	20.00	18
Greater than 1/2 to 1	5,223.00	33.00	18

Sum of Distance-weighted Values: 66.00

Sum of Distance-weighted Values/10: 7.00

Population Within 1 Mile Factor Value: 7.00

6.0 AIR MIGRATION PATHWAY

6.1.2 POTENTIAL TO RELEASE

6.1.2.1 Gas Potential to Release

Hazardous Substance	Source No.	Available to Release? (Y/N)	Ref.
Acetone	1	Y	9
Acetophenone	1	Y	9
Benz(a)anthracene	1	Y	9
Benzo(b)fluoranthene	1	Y	9
Biphenyl, 1,1-	1	Y	9
Bis (2-ethylhexyl) phthalate	1	Y	9
Butylbenzyl phthalate	1	Y	9
Di-n-butyl phthalate	1	Y	9
Fluoranthene	1	Y	9
Mercury	1	Y	9
Methyl ethyl ketone	1	Y	9
Methylene chloride	1	Y	9
Nitrosodiphenylamine, N-	1	Y	9
Phenanthrene	1	Y	9
Pyrene	1	Y	9

6.1.2.1.1 Gas Containment

Source No.	Source Haz. Waste Quantity Value, 0.5? (Y/N)	Gas Containment Description	Containment Factor Value (Table 6-3)	Refs.
1	Y	Uncontaminated soil cover >=1 foot and <=3 feet: Other.	10	5, 7

Gas Containment Factor Value: 10.00

6.1.2.1.2 Gas Source Type

Source No.	Gas Source Type	Source Haz. Waste Quantity Value 0.5? (Y/N)	Gas Source Type Factor Value (Table 6-4)	Refs.
1	Landfill	Y	11	5

Gas Source Type Factor Value: 11.00

6.1.2.1.3 Gas Migration Potential

Hazardous Substance	Source No.	Air Gas Migration Value	Ref.
Acetone	1	17.00	9
Mercury	1	17.00	9
Methyl ethyl ketone	1	17.00	9
Methylene chloride	1	17.00	9
Acetophenone	1	11.00	9
Biphenyl, 1,1-	1	11.00	9
Phenanthrene	1	11.00	9
Benz(a)anthracene	1	6.00	9
Benzo(a)pyrene	1	6.00	9
Benzo(b)fluoranthene	1	6.00	9
Benzo(k)fluoranthene	1	6.00	9
Bis (2-ethylhexyl) phthalate	1	6.00	9
Butylbenzyl phthalate	1	6.00	9
Chrysene	1	6.00	9
Di-n-butyl phthalate	1	6.00	9
Fluoranthene	1	6.00	9
Nitrosodiphenylamine, N-	1	6.00	9
Pyrene	1	6.00	9

Gas Migration Potential Factor Value: 17.00

6.1.2.1.4 Calculation of Gas Potential to Release Value

Gas Source Type Factor Value: 11.00

Gas Migration Potential Factor Value: 17.00

Sum of Factor Values: 28.00

Sum of Factor Values x Gas Containment Factor Value: 280.00

Gas Potential to Release Value: 280.00

6.1.2.2 Particulate Potential to Release

Hazardous Substance	Source No.	Available to Release? (Y/N)	Ref.
Aluminum	1	Y	9
Aluminum	1	Y	9
Antimony	1	Y	9
Arsenic	1	Y	9
Barium	1	Y	9
Benz(a)anthracene	1	Y	9
Benzo(a)pyrene	1	Y	9
Benzo(b)fluoranthene	1	Y	9
Benzo(g,h,i)perylene	1	Y	9
Benzo(k)fluoranthene	1	Y	9
Beryllium	1	Y	9
Biphenyl, 1,1-	1	Y	9
Bis (2-ethylhexyl) phthalate	1	Y	9
Butylbenzyl phthalate	1	Y	9
Cadmium	1	Y	9
Calcium	1	Y	9
Chlordane, gamma-	1	Y	9
Chromium	1	Y	9
Chrysene	1	Y	9
Cobalt	1	Y	9
Copper	1	Y	9
Di-n-butyl phthalate	1	Y	9
Dibenz(a,h)anthracene	1	Y	9
Fluoranthene	1	Y	9

Indeno(1,2,3-cd)pyrene	1	Y	9
Iron	1	Y	9
Lead	1	Y	9
Magnesium	1	Y	9
Manganese	1	Y	9
Mercury	1	Y	9
Nickel	1	Y	9
Nitrosodiphenylamine, N-	1	Y	9
Phenanthrene	1	Y	9
Potassium	1	Y	9
Pyrene	1	Y	9
Selenium	1	Y	9
Sodium	1	Y	9
Vanadium	1	Y	9
Zinc	1	Y	9

6.1.2.2.1 Particulate Containment

Source No.	Source Haz. Waste Quantity Value 0.5? (Y/N)	Particulate Containment Description	Containment Factor Value (Table 6-9)	Refs.
1	Y	Uncontaminated soil cover \geq 1 foot and \leq 3 feet: Other.	10	5, 7

Particulate Containment Factor Value: 10.00

6.1.2.2.2 Particulate Source Type

Source No.	Particulate Source Type	Source Haz. Waste Quantity Value 0.5? (Y/N)	Particulate Source Type Factor Value (Table 6-4)	Refs.
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Draft: 6/1/99

1	Landfill	Y	22	5

Particulate Source Type Factor Value: 22.00

6.1.2.2.3 Particulate Migration Potential

Hazardous Substance	Source No.	Particulate Migration Value	Ref.
Acetone	1	17.00	9
Mercury	1	17.00	9
Methyl ethyl ketone	1	17.00	9
Methylene chloride	1	17.00	9
Acetophenone	1	11.00	9
Biphenyl, 1,1-	1	11.00	9
Phenanthrene	1	11.00	9
Benz(a)anthracene	1	6.00	9
Benzo(a)pyrene	1	6.00	9
Benzo(b)fluoranthene	1	6.00	9
Benzo(k)fluoranthene	1	6.00	9
Bis (2-ethylhexyl) phthalate	1	6.00	9
Butylbenzyl phthalate	1	6.00	9
Chrysene	1	6.00	9
Di-n-butyl phthalate	1	6.00	9
Fluoranthene	1	6.00	9
Nitrosodiphenylamine, N-	1	6.00	9
Pyrene	1	6.00	9

Particulate Migration Potential Factor Value: 11.00

6.1.2.2.4 Calculation of Particulate Potential to Release

Particulate Source Type Factor Value: 22.00

Particulate Migration Potential Factor Value: 11.00

Draft: 6/1/99

Sum of Factor Values: 33.00

Sum of Factor Values x Particulate Containment Factor Value: 330.00

Particulate Potential to Release Value: 330.00

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6.2 WASTE CHARACTERISTICS

6.2.1 TOXICITY/MOBILITY

Hazardous Substance	Source No.	Toxicity Factor Value	Gas Mobility Factor Value	Particulate Mobility Factor Value	Toxicity/Mobility Factor Value (Table 6-13)	Ref.
Acetone	1	10.00	1		10	9
Acetophenone	1	10.00	1		10	9
Aluminum	1	0.00		0.0008	0	9
Aluminum	1	0.00		0.0008	0	9
Antimony	1	10,000.00		0.0008	8	9
Arsenic	1	10,000.00		0.0008	8	9
Barium	1	10,000.00		0.0008	8	9
Benz(a)anthracene	1	1,000.00	0.002	0.0008	2	9
Benzo(a)pyrene	1	10,000.00	0.0002	0.0008	8	9
Benzo(b)fluoranthene	1	1,000.00	0.002	0.0008	2	9
Benzo(g,h,i)perylene	1	0.00		0.0008	0	9
Benzo(k)fluoranthene	1	100.00	0.0002	0.0008	0.08	9
Beryllium	1	10,000.00		0.0008	8	9
Biphenyl, 1,1-	1	10.00	0.2	0.0008	2	9
Bis (2-ethylhexyl) phthalate	1	100.00	0.002	0.0008	0.2	9
Butylbenzyl phthalate	1	10.00	0.002	0.0008	0.02	9
Cadmium	1	10,000.00		0.0008	8	9
Calcium	1	0.00		0.0008	0	9
Chlordane, gamma-	1	10.00		0.0008	0.008	9
Chromium	1	10,000.00		0.0008	8	9
Chrysene	1	10.00	0.0002	0.0008	0.008	9
Cobalt	1	1.00		0.0008	0.0008	9
Copper	1	0.00		0.0008	0	9
Di-n-butyl phthalate	1	10.00	0.02	0.0008	0.2	9
Dibenz(a,h)anthracene	1	10,000.00		0.0008	8	9
Fluoranthene	1	100.00	0.002	0.0008	0.2	9
Indeno(1,2,3-cd)pyrene	1	1,000.00		0.0008	0.8	9
Iron	1	1.00		0.0008	0.0008	9
Lead	1	10,000.00		0.0008	8	9
Magnesium	1	0.00		0.0008	0	9
Manganese	1	10,000.00		0.0008	8	9
Mercury	1	10,000.00	0.2	0.0008	2E3	9
Methyl ethyl ketone	1	10.00	1		10	9
Methylene chloride	1	10.00	1		10	9

Nickel	1	10,000.00		0.0008	8	9
Nitrosodiphenylamine, N-	1	10.00	0.02	0.0008	0.2	9
Phenanthrene	1	0.00	0.02	0.0008	0	9
Potassium	1	0.00		0.0008	0	9
Pyrene	1	100.00	0.002	0.0008	0.2	9
Selenium	1	100.00		0.0008	0.08	9
Sodium	1	0.00		0.0008	0	9
Vanadium	1	100.00		0.0008	0.08	9
Zinc	1	10.00		0.0008	0.008	9

Notes:

Toxicity/Mobility Factor Value: 2.00E+3

6.2.2 HAZARDOUS WASTE QUANTITY

Source No.	Source Type	Source Hazardous Waste Quantity
1	Landfill	384.35

Sum of Values: 384.35

Hazardous Waste Quantity Factor Value: 100.00
(Table 2-6)

6.2.3 WASTE CHARACTERISTICS FACTOR CATEGORY VALUE

Toxicity/mobility Factor Value: 2,000.00
Hazardous Waste Quantity Factor Value: 100.00

Toxicity/mobility Factor Value x
Hazardous Waste Quantity Factor Value: 200,000.00

Waste Characteristics Factor Category Value: 18.00
(Table 2-7)

6.3 TARGETS

Level I Distance Categories

Sample ID: -

Location: -

Reference: -

Source: --

Distance from the source in miles: -

Reference: -

Distance categories subject to Level I concentrations: -

Level II Distance Categories

Sample ID: -

Location: -

Reference: -

Source: --

Distance from the source in miles: -

Reference: -

Distance categories subject to Level II concentrations: -

Actual Contamination Distance Categories

None

Potential Contamination Distance Categories

None

6.3.1 NEAREST INDIVIDUAL

Nearest Individual - Level I Concentrations

Residence, building or area subject to Level I concentrations:

Location:

Source: --

Draft: 6/1/99

AIR-Targets

Distance from the nearest source in miles: -

References: -

Nearest Individual - Level II Concentrations

Residence, building or area subject to Level II concentrations:

Location:

Source: --

Distance from the nearest source in miles: -

References: -

Nearest Individual - Potential Contamination

Residence, building or area nearest to source:

Location:

Source: 1.00

Distance from the nearest source in miles: 0.00

References: 18

Nearest Individual Factor Value: 0.00

6.3.2 POPULATION

6.3.2.2 Level I Concentrations

Distance Category	Population	References
None		

Sum of Population Exposed to Level I Concentrations: 0.00

Sum of Population Exposed to Level I Concentrations x 10: 0.00

Level I Concentrations Factor Value: 0.00

6.3.2.3 Level II Concentrations

Distance Category	Population	References
None		

Sum of Population Exposed to Level II Concentrations: 0.00

Level II Concentrations Factor Value: 0.00

6.3.2.4. Potential Contamination

Distance Category	Population	Reference	Population Range	Distance-Weighted Population Value (Table 6-17)
Greater than 0 to 1/4	323.00	18		131.00
Greater than 1/4 to 1/2	1,513.00	18		88.00
Greater than 1/2 to 1	5,223.00	18		83.00
Greater than 1 to 2	34,341.00	18		266.00
Greater than 2 to 3	85,232.00	18		120.00
Greater than 3 to 4	85,088.00	18		73.00

Sum of Distance-weighted Population
Subject to Potential Contamination: 761.00

Sum of Distance-weighted Population
Subject to Potential Contamination/10: 76.00

Potential Contamination Factor Value: 76.00

6.3.3 RESOURCES

Resource Use	Distance from Source	Reference
None		

Resources Factor Value: 0.00

6.3.4 SENSITIVE ENVIRONMENTS

6.3.4.1 Actual Contamination

Sensitive Environments

Sensitive Environment	Distance Category	References	Sensitive Environment Value (Table 4-23)
None			

Sum of Sensitive Environments Value: 0.00

Wetlands

Distance Category	Wetland Acreage within Distance Category	Reference
None		

Total Wetland Acreage: 0.00

Wetland Acreage Value (Table 6-18): 0.00

Sensitive Environment Actual Contamination Factor Value: 0.00

6.3.4.2 Potential Contamination

Sensitive Environments

Sensitive Environment	Distance Category	References	Sensitive Environment Value (Table 4-23)
None			

Wetlands

Distance Category	Wetland Acreage within Category	Wetlands Value per Distance Category (Table 6-18)	Reference
None			

Distance Category	Sum of Sensitive Environment Values (S_j)	Wetland Acreage Value (W_j)	Distance Weight (D_j)	$D_j(W_j + S_j)$

Sum of $D_j(W_j + S_j)$: 0.00

(Sum of $D_j(W_j + S_j)$)/10: 0.00

Sensitive Environments Potential Contamination Factor Value: 0.00

Attachment E

Copy of TDD No. 06-03-09-0004 and Amendments A and B



U.S. EPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

START2
Technical Direction Document
Booker Landfill PA/SI
Roy F. Weston

TDD: 06-03-09-0004
Contract: 68-W-01-005

TDD

Purpose: Work Assignment Initiation
Priority: Medium
Overtime: No

Period: Base Period
Verbal Date: 09/09/2003
Start Date: 09/17/2003
Completion Date: 12/01/2003

Project/Site Name: Booker Landfill PA/SI
Project Address: ILndfill between (b) (6) and (b) (6)
County: Harris
City, State Zip: Houston, TX
SSID: pending **CERCLIS:** pending

WorkArea: CERCLA ASSESSMENT ACTIVITIES
Activity: Combined Preliminary Assessment/Site Inspection
Activity Code: NX
Section of SOW: II.A.4
Performance Based:No

Authorized TDD Ceiling:	Cost/Fee	LOE
Previous Action(s):	\$0.00	FOIA (b) (4)
This Action:	\$27,200.00	-----
New Total:	\$27,200.00	-----

Specific Elements - Perform PA activities in conformance with, OSWER Directive 9345.0-01A "Guidance for Performing Preliminary, Assessments Under CERCLA" dated September 1991 and, Region-specific requirements available in Region's library., - Review past and present facility waste handling practices and permit history, - Document the presence quantity type or absence of uncontained or uncontrolled hazardous substances on site and releases to the environment, - Identify pollution dispersal pathways determine pathway_specific receptors and surrounding population density, - locate other environmentally sensitive receptors (for example wetlands and endangered species)

Description of Work:

This TDD is under work assignment 0137.

START shall review all pertinent file information from EPA and TCEQ prior to the initial site visit.

START shall develop a QASP for collection of 15-20 soil/sediment samples. QASP shall be designed to meet the following objectives;

- 1)are hazardous substances present at the site;
- 2)are hazardous substances impacting nearby residences;
- 3)is the site an NPL caliber site

START shall utilize the Contract Laboratory Program and FIILite software for all sample collection activities unless mitigating circumstances require use of a non CLP lab and is approved by the TM.

START shall contact Task Monitor William Rhotenberry 214.665.8372 for initial scoping meeting and/or conference call within 5 working after receipt of the TDD.

Accounting and Appropriation Information

SFO: 22

Line	DCN	IFMS	Budget/ FY	Appropriati on Code	Budget Org Code	Program Element	Object Class	Site Project	Cost Org Code	Amount
1	SCR001	AAA	01	T	6ASOP	50102D	2505	0600NX00	C001	\$27,200.00

Funding Summary:	Funding
Previous:	\$0.00
This Action:	\$27,200.00
Total:	\$27,200.00

Funding Category
CERCLA Pipeline

Task Monitor Section

Task Monitor: William Rhotenberry

Date: 09/05/2003

Phone #: 214.665.8372

Project Officer Section

Project Officer: Linda Carter

Date: 09/08/2003

Contracting Officer Section

Contracting Officer: Tobin Osterberg

Date: 09/11/2003

Contractor Section

EPA

U.S. EPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

START2
Technical Direction Document
Booker Landfill PA/SI
Roy F. Weston

TDD: 06-03-09-0004
Amendment: A
Contract: 68-W-01-005

TDD - Signed by Tobin Osterberg/R6/USEPA/US on 11/18/2003 07:23:28 AM, according to Cheng Wei Feng/start6/rfw-star

Project/Site Name: Booker Landfill PA/SI	Period: Base Period
Project Address: Lndfill between (b) (6) and (b) (6)	Start Date: 09/17/2003
County: Harris	Completion Date: 12/31/2003
City, State Zip: Houston, TX	WorkArea: CERCLA ASSESSMENT ACTIVITIES
SSID: RL CERCLIS: TXN000605565	Activity: Combined Preliminary Assessment/Site Inspection
	Activity Code: NX
	Section of SOW: II.A.4
	Performance Based: No

Authorized TDD Ceiling:	Cost/Fee	FOIA (b) (4)
Previous Action(s):	\$27,200.00	-----
This Action:	\$0.00	FOIA (b) (4)
New Total:	\$27,200.00	-----

Specific Elements - Perform PA activities in conformance with, OSWER Directive 9345.0-01A "Guidance for Performing Preliminary, Assessments Under CERCLA" dated September 1991 and, Region-specific requirements available in Region's Library., - Review past and present facility waste handling practices and permit history, - Document the presence quantity type or absence of uncontained or uncontrolled hazardous substances on site and releases to the environment, - Identify pollution dispersal pathways determine pathway_specific receptors and surrounding population density, - locate other environmentally sensitive receptors (for example wetlands and endangered species)

Description of Work:

This TDD is under work assignment 0137.

Amendment A extends the completion date to 12/31/03 with no change in cost/LOE due to delays in CLP results.

START shall review all pertinent file information from EPA and TCEQ prior to the initial site visit.

START shall develop a QASP for collection of 15-20 soil/sediment samples. QASP shall be designed to meet the following objectives;

- 1)are hazardous substances present at the site;
- 2)are hazardous substances impacting nearby residences;
- 3)is the site an NPL caliber site

START shall utilize the Contract Laboratory Program and FIILite software for all sample collection activities unless mitigating circumstances require use of a non CLP lab and is approved by the TM.

START shall contact Task Monitor William Rhotenberry 214.665.8372 for initial scoping meeting and/or conference call within 5 working after receipt of the TDD.

Accounting and Appropriation Information

										SFO: 22
Line	DCN	IFMS	Budget/ FY	Appropriation Code	Budget Org Code	Program Element	Object Class	Site Project	Cost Org Code	Amount
1	SCR001	AAA	01	T	6ASOP	50102D	2505	0600NX00	C001	\$0.00

Funding Summary:		Funding	Funding Category
	Previous:	\$27,200.00	CERCLA Pipeline
	This Action:	\$0.00	
	Total:	\$27,200.00	

Task Monitor Section

- Signed by William Rhotenberry/R6/USEPA/US on 11/14/2003 09:41:39 AM, according to Cheng Wei Fen

Task Monitor: William Rhotenberry Date: 11/14/2003

Project Officer Section - Signed by Tobin Osterberg/R6/USEPA/US on 11/18/2003 07:23:28 AM, according to Cheng Wei Fen

Project Officer: Linda Carter Date: 11/17/2003

Contracting Officer Section - Signed by Tobin Osterberg/R6/USEPA/US on 11/18/2003 07:23:28 AM, according to Cheng Wei Fen

Contracting Officer: Tobin Osterberg Date: 11/18/2003

Contractor Section

EPA

U.S. EPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

START2 Technical Direction Document Booker Landfill PA/SI Weston Solutions; Inc.

TDD: 06-03-09-0004
Amendment: B
Contract: 68-W-01-005

TDD - Signed by Tobin Osterberg/R6/USEPA/US on 12/22/2003 06:56:27 AM, according to Cheng Wei Feng/start6/rfw-star

Project/Site Name: Booker Landfill PA/SI	Period: Base Period
Project Address: Lndfill between (b) (6) and (b) (6)	Start Date: 09/17/2003
County: Harris	Completion Date: 01/31/2004
City, State Zip: Houston, TX	WorkArea: CERCLA ASSESSMENT ACTIVITIES
SSID: RL CERCLIS: TXN000605565	Activity: Combined Preliminary Assessment/Site Inspection
	Activity Code: NX
	Performance Based: No

Authorized TDD Ceiling:	Cost/Fee	LOE
Previous Action(s):	\$27,200.00	FOIA (b) (4)
This Action:	\$0.00	FOIA (b) (4)
New Total:	\$27,200.00	-----

Specific Elements - Perform PA activities in conformance with, OSWER Directive 9345.0-01A "Guidance for Performing Preliminary Assessments Under CERCLA" dated September 1991 and, Region-specific requirements available in Region's Library., - Review past and present facility waste handling practices and permit history, - Document the presence quantity type or absence of uncontained or uncontrolled hazardous substances on site and releases to the environment, - Identify pollution dispersal pathways determine pathway_specific receptors and surrounding population density, - locate other environmentally sensitive receptors (for example wetlands and endangered species)

Description of Work:

This TDD is under work assignment 0137.

Amendment B extends the completion date to 1/31/2004 with no change in cost/LOE due to delays in obtaining CLP data deliverable.

Amendment A extends the completion date to 12/31/03 with no change in cost/LOE due to delays in CLP results.

START shall review all pertinent file information from EPA and TCEQ prior to the initial site visit.

START shall develop a QASP for collection of 15-20 soil/sediment samples. QASP shall be designed to meet the following objectives;

- 1) are hazardous substances present at the site;
- 2) are hazardous substances impacting nearby residences;
- 3) is the site an NPL caliber site

START shall utilize the Contract Laboratory Program and FIILite software for all sample collection activities unless mitigating circumstances require use of a non CLP lab and is approved by the TM.

START shall contact Task Monitor William Rhotenberry 214.665.8372 for initial scoping meeting and/or conference call within 5 working after receipt of the TDD.

Accounting and Appropriation Information

SFO: 22

Line	DCN	IFMS	Budget/ FY	Appropriati on Code	Budget Org Code	Program Element	Object Class	Site Project	Cost Org Code	Amount
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Funding Summary:		Funding	Funding Category
	Previous:	\$27,200.00	CERCLA Pipeline
	This Action:	\$0.00	
	Total:	\$27,200.00	

- Signed by William Rhotenberry/R6/USEPA/US on 12/19/2003 02:41:58 PM, according to Cheng Wei Fen

Date: 12/19/2003

Project Officer Section - Signed by Tobin Osterberg/R6/USEPA/US on 12/22/2003 06:56:27 AM, according to Che

Date: 12/22/2003

Contracting Officer Section - Signed by Tobin Osterberg/R6/USEPA/US on 12/22/2003 06:56:27 AM, according to

Date: 12/22/2003

Contractor Section - Signed by Robert Beck/start6/rfw-start/us on 12/22/2003 01:55:08 PM, according to